FEBRUARY, 1954

WOOD and Wood Products

THE NATIONAL MANAGEMENT AND PRODUCTION MAGAZINE OF THE WOOD INDUSTRY

A Vance Publication

FEATURES IN THIS ISSUE

- Incentive Plan for Middle Management
- Wood's Future in Radio-TV Cabinets
- Materials Handling for Profits
- Modern Luggage From Plywood
- Trends–Current Prices–Letters–New Products

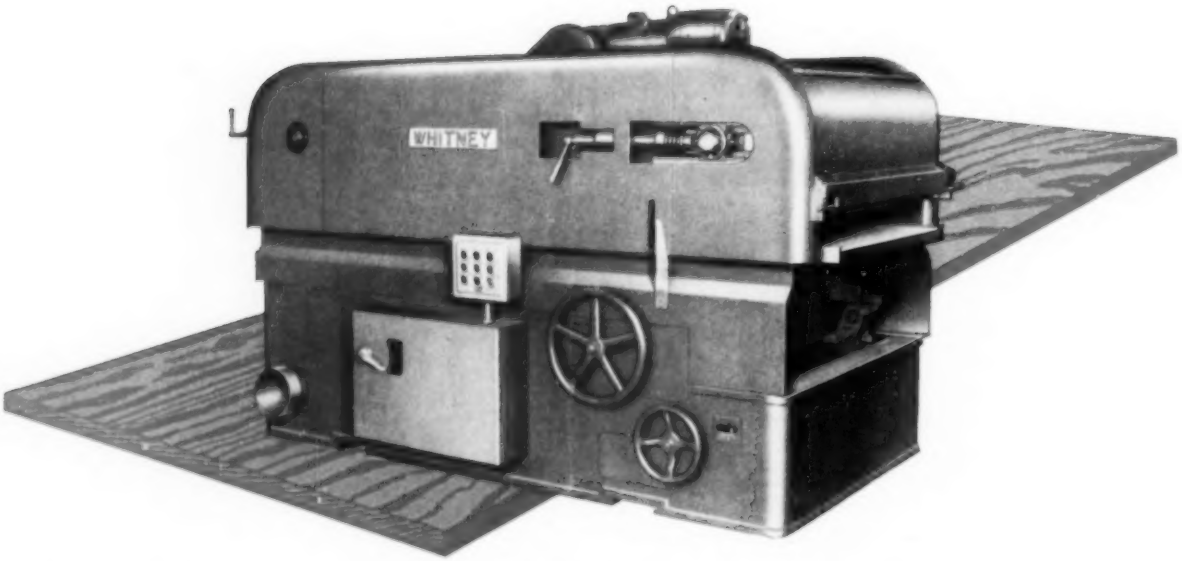
WOOD SALUTES

L. J. Carr

WHITNEY

Announces the 600

NEW-MATIC FACER



Of Revolutionary Design For Efficient, Heavy Duty Operation

An entirely new facing planer, Whitney designed and Whitney built, to handle maximum production of rough cut lumber, glued-up panels or cores. Feed mechanism is of revolutionary design consisting of rubber fabric endless belt with pneumatic feed fingers mounted in sections on the belt. Insures a firm, positive feed of the lumber without strain or distortion. Variable feed unit provides feeds up to 100 feet per minute. Cutterhead mounting permits greatest ease and safety in setting and grinding the knives. Machine is provided with push button operation and automatic safety controls. Built in 24" and 36" widths.

Write for circular WP2

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Planer Specialists For More Than 100 Years

WINCHENDON, MASSACHUSETTS, U. S. A.

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VARIETY SAWS • BACK KNIFE LATHES

WHAT IS YOUR WOOD-BONDING PROBLEM?

STRENGTH? Under all conditions of service "Penacolite" adhesives, when fully cured, form bonds as strong as the woods they join.

DURABILITY? "Penacolite" bonds retain their strength through temperatures ranging from -40°C. to wood-charring heat, are unaffected by the stresses of vibration or shrinking or swelling. These bonds effectively resist oils, greases, most solvents and most acids. And they're waterproof in both salt and fresh water.

PERMANENCE? "Penacolite" bonds retain their strength through the years because the curing of these adhesives is an irreversible chemical reaction.

APPLICATION AND CURING? "Penacolite" adhesives cure at room temperature (minimum 70°F.) in a few hours, or in just a few minutes at accelerated heat. They are easy on cellulosic fibers since curing is carried out under neutral conditions.

VERSATILITY? "Penacolite" adhesives are a good buy for most wood-bonding jobs, large or small, curved application or straight. They are also recommended for the bonding of most thermo-setting and some thermo-plastic resins and plastics, as well as natural and some synthetic rubbers.

STORAGE? "Penacolite" adhesives can be used even after being stored for a year or more at room temperature.

WRITE TODAY *for our free booklet describing the "Penacolite" adhesives. We will be glad to make recommendations concerning your wood bonding problem.*

KOPPERS

KOPPERS COMPANY, INC.

Chemical Division, Dept. WWP-24, Koppers Bldg., Pittsburgh 19, Pennsylvania

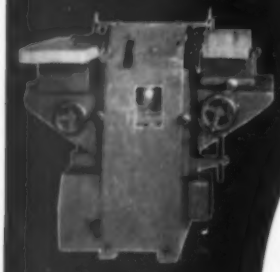
PENACOLITE® RESORCINOL ADHESIVES

The original resorcinol, waterproof, room-temperature-setting adhesives

206 Double Spindle Shaper

405 Surfacer

612 Router



155 Serpentine Shaper

PORTER machinery...

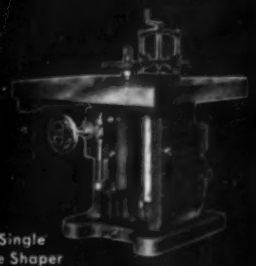
DIVIDEND DESIGNED

to give you more production per dollar

300 Jointer

Straight Line and Compound Angular Cut-Off Saws

105 Single Spindle Shaper



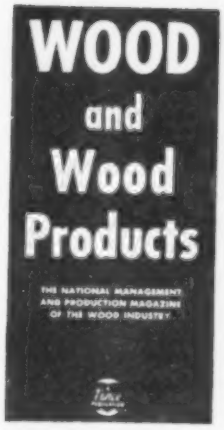
203 Single Spindle Shaper

700 Surfacemaster Facing Planer

Hydracut Saw

Your cost per job is less with Porter DIVIDEND DESIGNED machinery. Porter machines are faster, take heavier cuts and require less adjusting. You'll find an extra margin of speed, capacity and strength not found in ordinary machines. When you need a Router, Saw, Shaper, Planer, Carver, Jointer, Surfacer or Serpentine Shaper investigate Porter, the machinery designed for greater dividends.

C. O. Porter
Machinery Company
660 Front St., N.W.
Grand Rapids, Michigan



FEBRUARY, 1954

Vol. 59, No. 2

Herbert A. Vance .....Publisher
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Elmer Olin.....Circulation Manager

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(advertisement)

Mauk Talk

So our soldiers are coming home to garrison guard duty now, for which we can be thankful and it recalls the goodie about the sentry who shouted, "Halt! Who goes there?"

The recruit replied: "Oh, you wouldn't recognize me anyway. I'm new here."

* * *

She: "I suppose you think I'm a perfect idiot."
Cat: "Oh, no. None of us is perfect."

* * *

Advance fashion note: They're wearing the same things in brassieres this year.

* * *

That easier way of doing business is simply this. Bring all your materials problems to MAUK.

Here's a firm of fine facilities, wide experience and top reputation whose product is lumber — whose business is service — whose customer should be you.

* * *

Simple Celia bought a pair of low heels to match her new boy friend. No, he's not a low heel but he is mighty short.

* * *

"Do you ever two time your wife?"
"Who else?"

* * *

Makes sense—heard of a guy who tried to increase his income tax exemptions by listing Uncle Sam as a dependent.

* * *

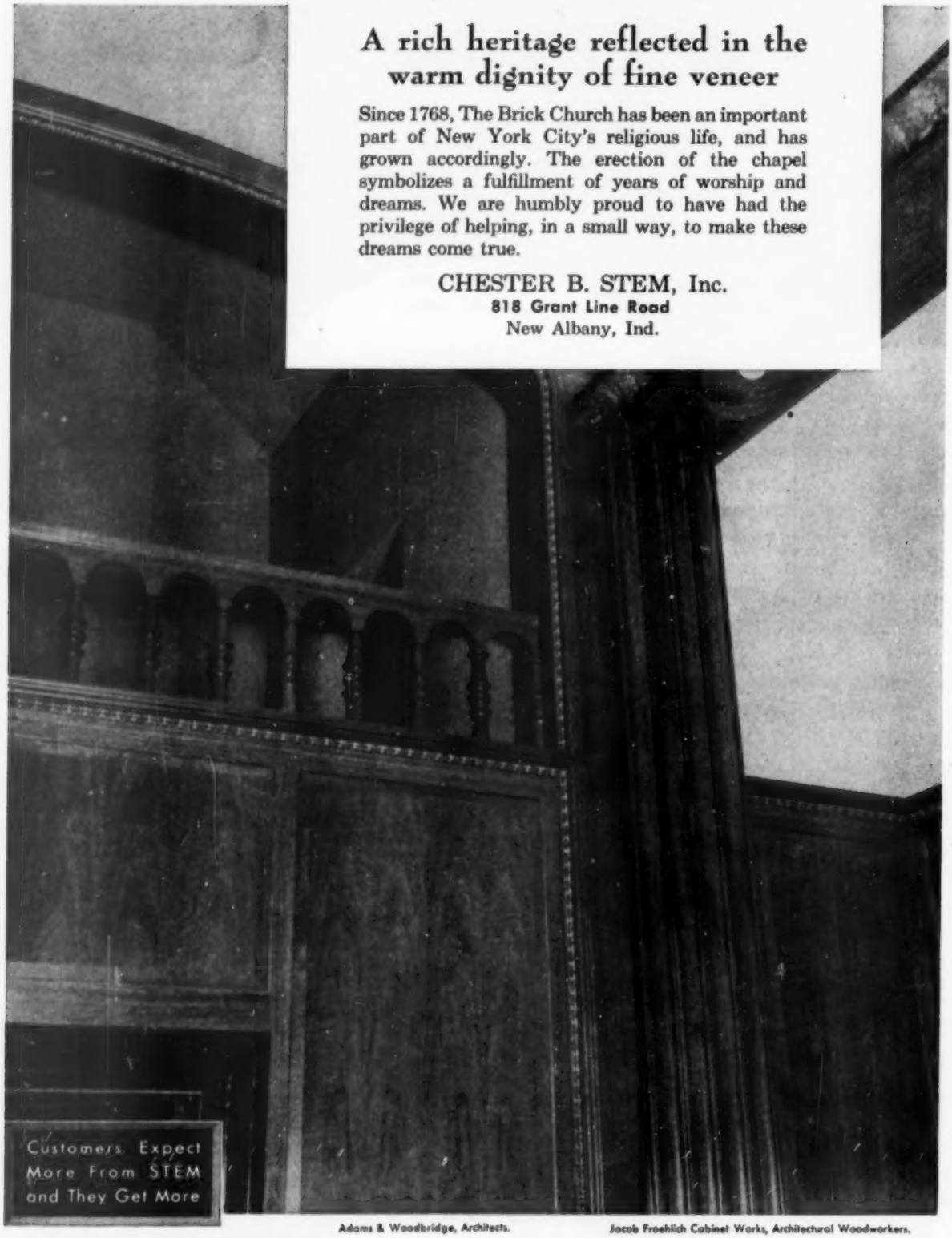
Middle aged yearning: Sometimes he wishes his wife were his mother so he could run away from home.

* * *

MAUK Seattle Lumber Co.
Seattle, Washington

* * *

C. A. MAUK Lumber Co.
Toledo, Ohio



A rich heritage reflected in the warm dignity of fine veneer

Since 1768, The Brick Church has been an important part of New York City's religious life, and has grown accordingly. The erection of the chapel symbolizes a fulfillment of years of worship and dreams. We are humbly proud to have had the privilege of helping, in a small way, to make these dreams come true.

CHESTER B. STEM, Inc.
818 Grant Line Road
New Albany, Ind.

Customers Expect More From STEM and They Get More

Adams & Woodbridge, Architects. Jacob Froehlich Cabinet Works, Architectural Woodworkers.

These higher grades of
VENEER and LUMBER
manufactured and available at all times

American Walnut . . . Avodire . . . Hard Maple . . . White Ash . . . Yellow Poplar . . . Cherry . . . Indiana Soft Textured White and Red Oak . . . Butternut . . . Prima Vera . . . Honduras and African Mahogany . . . Knotty Pine . . . Teak . . . English Yew . . . Satinwood . . . Zebra Wood . . . Special logs and thicknesses for special places . . . lumber from modern dry kilns.

FEBRUARY, 1954

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VOL. 59, NO. 2

INDUSTRY NEWS . . . . . AND TRENDS

LUMBER

Lumber Demand to Hold Good

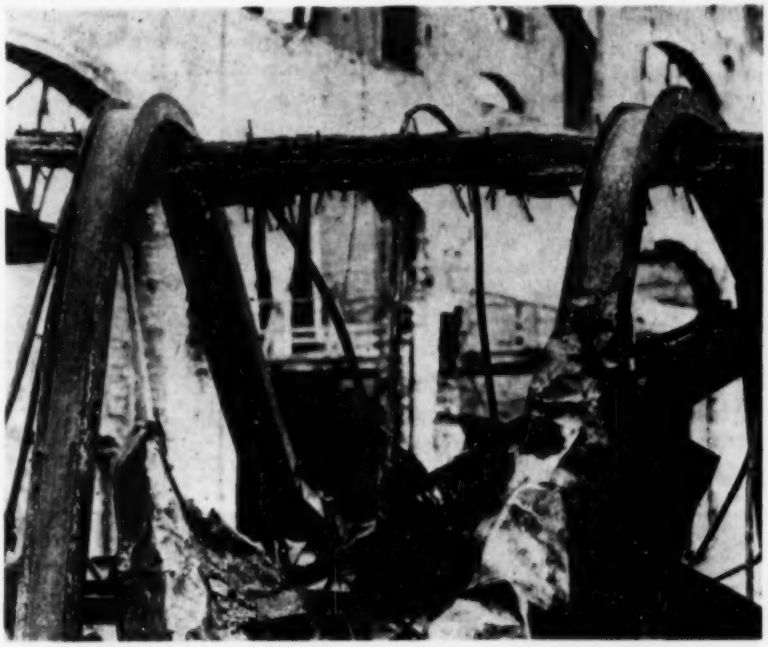
Predictions of generally favorable business conditions in 1954, along with forecasts of a substantial volume of construction, indicate a good potential demand for lumber, according to the 90th quarterly report of the Lumber Survey Committee to the Secretary of Commerce. The normal reduction in output which occurs during winter months, coupled with reports that some unprofitable lumber operations have closed down, portend a lumber supply that is in closer harmony with demand.

During the third quarter of 1953 the lumber industry continued to make adjustments to changing market conditions. Supply exceeded demand during the quarter, but current reports reflect an expectation that supply and demand would soon begin to dome into better balance.

Production of an estimated 10,244 million bd. ft. of lumber during the third quarter of 1953 was 2% below the corresponding quarter of 1952. For the first nine months of 1953, however, output was estimated at 29,725 million bd. ft., 4% above the similar 1952 period and 2% above the previous postwar peak year of 1951. Lumber shipments and new orders were both less than production. Gross mill stocks increased 8% during the quarter, an unfilled orders as of Sept. 30 were equivalent to 23% of stocks. Average lumber prices as reflected in the Wholesale Price index declined 2% in the third quarter.

From Canada, the Schultz Timber Bulletin forecast a very good year if lumber can beat back continued inroads of "substitute" products. "Good to better" was the outlook for the immediate future, with prices holding their improved position.

For the long range North American outlook, the population of Canada and the United States was assured of passing 200 million in 1965 and close to 220 million in 1975. This tremendous growth was seen as taxing production of the lumber industries since the United States is now a net importer of lumber and Canada's biggest customer for newsprint and woodpulp.



Wood Beam Supports Twisted Steel Girder in Disastrous Fire

Anyone who sees Borden Co. Chemical Division's page advertisement in this issue of Wood & Wood Products will recognize above picture, taken after short, hot fire in casein plant at Frankfort, N.Y. Steel roof trusses quickly collapsed and plant was total loss, but note how heavy wood member (12x16 in. nailed laminated beam) stood up after hours of burning and supported twisted steel girders. Ad points out that modern glue-laminated member treated or coated for fire resistance would show even greater durability.

Western Pine Production Up

Present estimates place 1953 lumber production for the Western Pine region at 7678 million, reports the Western Pine association. This increase of 3.5% over 1952 was due in large part to the unusually favorable operating conditions in the first quarter, second half production being down almost 6% from that period a year ago. Mill stocks in the region Dec. 31 were estimated at 1857 million bd. ft. as compared to 1665 million at the beginning of 1953.

Lumber demand during the second half of 1953 slowed somewhat from the pace set in the same 1952 period. However, preliminary estimates indicate that total shipments from the Western Pine region for 1953 of 7468 million were off only .2 of 1% from previous year's volume. Only in 1950 and 1952 did regional shipments exceed those of the past year.

Redwood Gaining in Demand

Sawmills in the 300-mile stretch of northern California's towering redwoods are slicing up the reddish, tight grained boards at a rate more than double the prewar pace in an effort to satisfy demands of building contractors and a new host of users in industrial and commercial products. Major

mills reported production gains up to 11% in 1953 and overall production seemed certain to top the 870 million feet of 1952.

Architects are using the colorful wood more and more for external siding because of its resistance to weather and decay, and it is also popular for interior paneling. It's dimensional stability makes the wood valuable in a wide range of commercial and industrial uses.

The redwood industry is currently bending its efforts toward increasingly better management and cutting practices which promise to meet increasing demands without depleting the stand of 30-foot tree giants. Though the trees have attained ages of 2,000 years, it has been learned they can be cut on a 100-year rotation cycle and still maintain the present level of production.

Lumber Shipments Rise

Lumber shipments of 479 mills reporting to the National Lumber Trade Barometer were 22.9% above production for the week ending January 2. In the same week new orders of these mills were 34.9% above production. Unfilled orders of the reporting mills amounted to 33% of stocks. For the reporting softwood mills unfilled orders were equivalent to 20 days' production at current rate, and gross stocks were equivalent to 59 days' production.

For the year to date, shipments of reporting identical mills were 1.9% above production; new orders were 1.2% above production.

Moore Cross-Circulation Kilns at Magnavox Co., Greeneville, Tenn.

PERFECTLY DRIED . . . .

Moore Stacker at Lester Piano Mfg. Co., Lester, Pa.

and ECONOMICALLY HANDLED

That's the "Payoff" combination in lumbering today!

More and more mills are turning to Moore STACKER-DRYING-UNSTACKER Systems, to produce the best quality lumber at lowest possible cost.

The Moore Line is flexible to suit your operation, whether it be small or large. Write for information.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE, FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B. C. CANADA · NORTH PORTLAND, OREGON

RESEARCH

Manual Aids Defense Buying

A new technical manual, "Lumber and Allied Products," prepared by the U. S. Forest Products Laboratory for the Army Corps of Engineers, marks a long forward step toward greater economy in military purchases of wood products, with potential savings of millions of dollars to American taxpayers. The book is available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for $1 a copy.

Designed to help the military services get the kinds of lumber, plywood and other wood products they need with utmost economy of material and money, the manual points out which grades, sizes and kinds of lumber are economically suited for a given purpose.

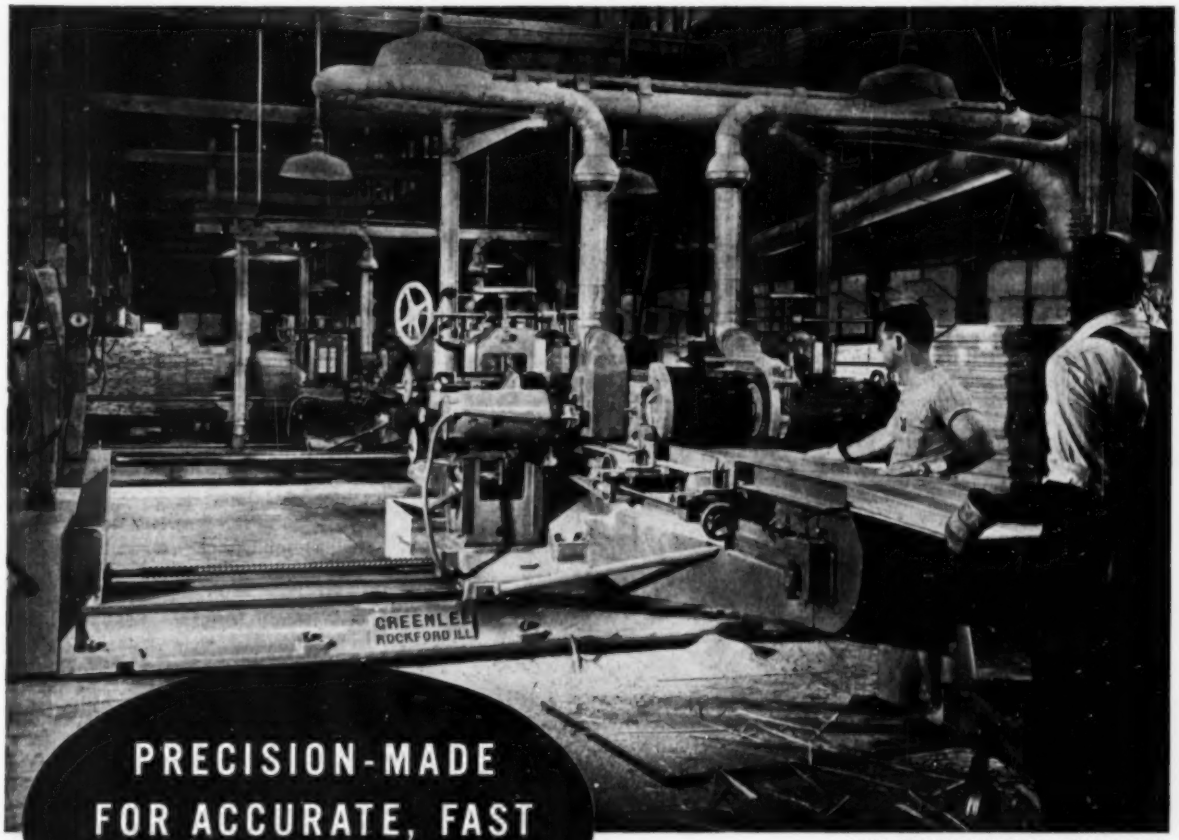
Emphasis is laid on adhering to regular commercial practices, so that wood products are produced through established trade channels, thus avoiding extra charges for special qualities and sizes wherever possible.

Wood Product Research Up

Research for the lumber and wood using industries, conducted during 1953 at the Timber Engineering Co. laboratory, research affiliate in Washington, D. C., of the National Lumber Mfrs. Association, showed a sharp increase over 1952. New projects brought to the industry-owned lab resulted in a 20% increase in both clientele and projects.

Clients included manufacturers of lumber and wood products, railroads, wood ship builders, trade associations, government and military agencies, and manufacturers of finishes and wood treating materials. Carl A. Rishell, director of research, states that manufacturers gearing to meet competitive markets are placing emphasis not only on improving wood's characteristics and serviceability, but on practical, economical utilization of wood residues left over from logging and product manufacture.

A copy of the company's 1953 annual report, detailing the year's activities, is available on request to Timber Engineering Co., 1319 18th St. N. W., Washington 6, D. C.



GREENLEE DOUBLE CUT-OFF SAW IN OPERATION AT STATESVILLE PLYWOOD AND VENEER COMPANY

PRECISION-MADE FOR ACCURATE, FAST PRODUCTION

. . . Greenlee No. 542 Electric Double Cut-Off Saw

"We wish to congratulate you on the fine double-end trim saws recently placed in operation here. They show beautiful workmanship and they really do a fine job."

That's what Mr. Elbert M. Shelton, president of Statesville Plywood and Veneer Company, Statesville, N. C., has to say about their new GREENLEE No. 542.

Reasons are many why the GREENLEE No. 542 does such smooth, accurate work . . . and at high speed! First is because each one is made so sturdily ... built to handle the work with ease and stand up under production requirements at high speeds.

Next is its "watchwork like" construction and the precise setting arrangement which permits making adjustments to a fraction of 1/64". Dials show the exact setting of the movable housing, and the machine cuts exactly to the size indicated.

And remember, too, the GREENLEE No. 542 is extremely versatile. In addition to its double cut-off operations, with attachments it will handle your shaping, relishing, tenoning, dadoing or scoring.

Get all the details on this precision machine today. Write Greenlee Bros. & Co., 1922 Twentieth Avenue, Rockford, Illinois.

MACHINERY & TOOLS
GREENLEE

GREENLEE WOODWORKING MACHINERY: MORTISERS • BORERS • SAWS • TENONERS • PLANERS • SHAPERS • MORTISING and BORING TOOLS

FURNITURE

One of Top Years Seen in '54

One of the four best years of all time is in store for the home furnishings industry in 1954. So said General Lawrence H. Whiting, president of the American Furniture Mart, as the 30th annual winter market got away to an optimistic start in Chicago early in January.

This carefully weighed appraisal tempered estimates of some authorities that the industry would suffer a 5 to 10% drop from its 1953 volume. Whiting foresees total home furnishings sales for this year of about $14.5 billion—around $3.6 billions of which will be in the household furniture category.

The same elements that made 1953 a record business year—a steadily growing population, continued high employment and wages and a high amount of disposable income—were cited by Whiting in support of his statement.

Seidman and Seidman, certified public accountants, substantiated the record pace of 1953, pointing out that for the first 11 months shipments were still 5% ahead of 1952 and that total orders booked to November 30 were approximately the same in dollar amount as those booked in the like 1952 period. While there has been a trend to reduce forward buying in recent months, the November decline of 4% was well under the average 7% seasonal drop of the past ten years, and within 1% of the November 1952 shipments.

November orders, too, followed the same pattern. While they broke no records, they were better in dollar amount than those taken in five of the last ten years. Reports from the January market showed dealers were keeping their orders closely aligned to their inventories.

For 1954, tax reductions were expected to have a sweetening effect on the market. While there was every indication prices would remain unchanged in the middle 80% of manufacturers' lines, major spur to sales was seen in the 5 to 10% better value being built into new and old lines alike.

Fifty percent of the bedroom and upholstered furniture suites sold will retail for less than $200," Whiting said, "and 75% for less than $300." As reflected at the January Chicago American Furniture Mart, modern stylings continued to be dominant. There were transitional combinations, however, using some of the best materials and motifs of the past to attract public interest. There was also a definite trend toward more natural finishes in many lines.

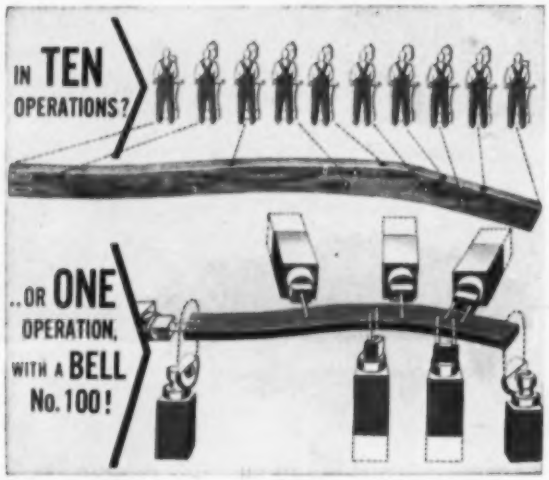
Dominance in American woods far overshadowed foreign woods. Walnut in particular was more evident than ever, several manufacturers introducing new lines in this wood.

The major change in furniture production methods introduced for the first time at the January market was noted in furniture made of boards bonded from shavings and chips by use of resins and pressure—chipboard (see WOOD & WOOD PRODUCTS, Dec. 1953). The end product is being used as a foundation for veneered panels as well as an actual surface material.

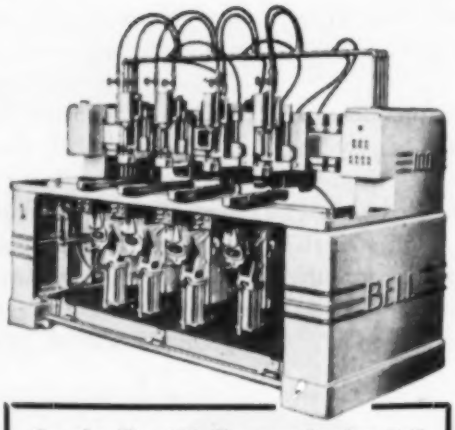
Whiting described this new wood as "a way of making a T-bone steak out of hamburger," and added, "Economically, the process will make possible the production of fine furniture at lower prices." He also pointed out the new wood will help conserve the 75% of cabinet wood heretofore wasted annually in furniture production.

The advent of color television, shown for the first time to buyers en masse at the market, also means more and better business for the industry, it was pointed out, since TV keeps people at home and increases the use of furnishings. Color TV, described

How would *you* bore this Post?



Compare your present production rate with speeds of 20 posts per minute on The Bell "100" . . . see just how much your costs would be sliced! And these savings are not limited to long runs. Set-up time averages under 18 minutes, making short-run savings, too. You'll save on assembly time, for all holes are bored at one time . . . always in perfect alignment.
Used as a horizontal . . . a vertical or a combination multiple head borer. There is no more versatile machine which you could consider for your plant, regardless of the type of furniture you make.
Write for complete details. There is no obligation of course.



See the No. 100 Borer and other Bell Machines in operation at the Woodworkers Industry Show. Space D-9 to D-16. Civic Auditorium, Grand Rapids, Michigan, May 5, 6 and 7.

Bell
WOODWORKING MACHINERY
The BELL MACHINE COMPANY, 78 Jackson Drive, Oshkosh, Wis.

There's No Stumping The Experts

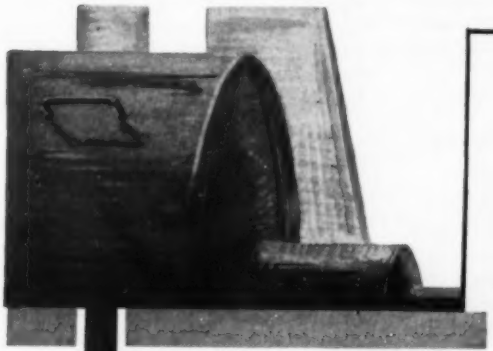
Ask the man who operates a

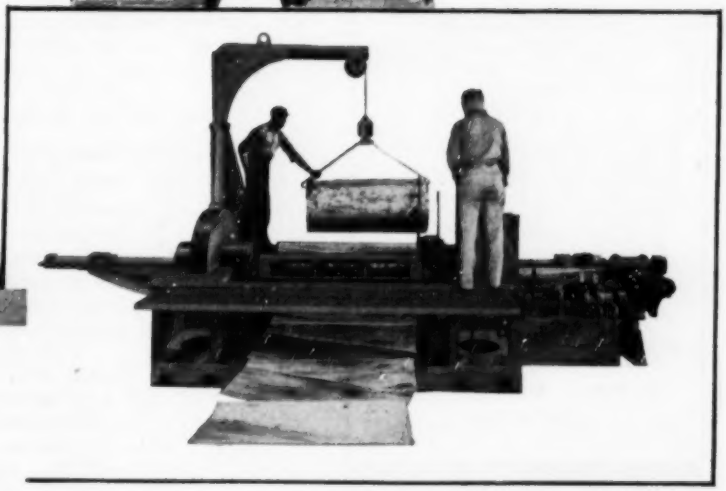
JACKSON
VENEER LATHE

He will tell you . . . .

He watches the complete operation every minute of every working day. He is the fellow best qualified to tell you the extraordinary performance of the hydraulic hoist . . . hydraulic chucking . . . and the rapid traverse knife carriage plus many more features. Yes . . . there is no stumping this fellow . . . he is the expert who knows that JACKSON VENEER LATHES are the top performing lathes in the industry!

A Jackson Service Engineer will visit your plant on request. He can give you profitable information.





JACKSON INDUSTRIES, INC.

VENEER MACHINES DIVISION

BIRMINGHAM, ALABAMA

as still in the novelty class with $1,000 prices and up for a 12½ in. picture, is nevertheless temporarily slowing the black and white market. Last year's record output of nearly seven million receivers may fall to 4.5 or 5 million in 1954. Color output should reach about 200,000.

EDUCATION

Earns Alabama Poly Degree

The first graduate degree in forestry from Alabama Polytechnic Institute was awarded Dec. 17 to James E. Moak of McComb, Miss. He entered API in the fall of 1952 as the first recipient of the Westervelt Forestry Fellowship for graduate study.

COMING EVENTS

Feb. 2: Pacific Northwest Section Meeting, FPRS, Portland, Ore.

Feb. 10: Pacific Southwest Section Meeting, FPRS, Los Angeles, Calif.

March 4-5: Eastern Canadian Section Meeting, FPRS, Chateau Laurior, Ottawa, Canada.

May 5-7: National Meeting, FPRS, and Woodworkers Industry Show, Grand Rapids, Mich.

May 21-22: Redwood Region Logging Conference, Ukiah, Calif.

BEHIND THE MILLS
THE CONNOR TIMBER STANDS

Over 115,000 acres of hardwood timber, assuring our customers of a backlog of choice Northern Hardwoods.

SPECIALIZING IN:

cut to size furniture plywood
cupboard doors
basswood bending panels
die boards
game boards
hardwood lumber cores
northern veneers
glued-up lumber dimension
school furniture plywood

●

BIRCH, MAPLE, ASH, OAK,
BASSWOOD, ELM, MAHOGANY
AND WALNUT

UNDERWOOD VENEER COMPANY
A Division of
Connor Lumber and Land Co.
WAUSAU WISCONSIN

LETTERS to the EDITOR

Chipboard Unit a World Hit

Editor, WOOD & WOOD PRODUCTS:

Recently you published in your magazine an interesting article referring to a process which is now in operation at the Berkline Corp. This operation was to manufacture chipboard, and the process and machinery was developed by the Chipcraft Co. We would appreciate learning more of this process, and would like to have you supply us with the name of the party to be contacted. Thank you.

—G. B. Co., Ill.

Editor, WOOD & WOOD PRODUCTS:

Please give me the address of the Chipcraft Co., John Crafton, president, named in article, "New Chipboard Unit at Berkline," on Page 24 of your December issue. Thanks.

—R. T. V. Co., N. Y.

Editor, WOOD & WOOD PRODUCTS:

I was interested in the new Berkline chipboard unit mentioned in the December issue of WOOD & WOOD PRODUCTS and would like, if possible, to have further details. Could you let me have the address of the firm in question, please?

—J. R. G. & Co., England.

Editor, WOOD & WOOD PRODUCTS:

In the December issue of your excellent WOOD & WOOD PRODUCTS we have read with interest your article on the new chipboard unit at Berkline Corp.

In our capacity as importers of woodworking machinery, we would take an interest in being informed more closely of the machine in question, and thus we should be grateful if you would state the address of the Chipcraft Co. which has constructed this.

—A./S F. L. B., Denmark.

Drilling Boat Rod Foregrips

Editor, WOOD & WOOD PRODUCTS:

We have a problem in our production of glass boat rods and are appealing to you for assistance. On our boat rod we use a wooden foregrip which must be drilled straight through the center the entire length of the foregrip.

We have two lengths of foregrips; one is 7⅞ in. with a 1¼ in. diameter and the smaller one is 7 in. with a 1 in. diameter. Presently, we are drilling the foregrips in a fixture and drill press. Our drill is about 4½ in. long, and this does not make it possible for us to drill a straight hole or to drill the entire length the way we should.

Could you tell us what machine would do this drilling job for us, and do it accurate? Or could you put us in touch with people that might specialize in drilling of this sort and possibly we could find a source that would drill these foregrips for us. Our manufacturing season is on in full force, so we will appreciate an answer as soon as possible.

—S. C. Corp., Wis.

Wants to Bend Wood Dowels

Editor, WOOD & WOOD PRODUCTS:

Kindly advise us if you have listed any sources for bending wood dowels. We desire to bend dowels from 5/16 in. up to ½ in. in diameter, made of a hard wood like birch or equivalent. We desire them to be bent at a right angle, with a 1⅝ in. radius inside bend. Thank you for your cooperation.

—A. E. L., N. J.

Wood Window Problem

Editor, WOOD & WOOD PRODUCTS:

Concerning the manufacture, on a production basis, of double-hung windows, will you describe for us the best method of beveling and channeling in one operation the bottom rails of the bottom sash, after assembly of the sash but before glazing, and also tell us the best type of equipment for this purpose?

—W. H. M., Me.

Casting Resins Still Hot

Editor, WOOD & WOOD PRODUCTS:

Would you kindly forward us a reprint on "How Casting Resins Are Used to Turn Wood Waste into Profitable By-Products"? (See August, 1953, WOOD & WOOD PRODUCTS.) We would also be interested in receiving the names of any companies that might be able to supply the casting resins.

—R. L. P., Inc., Minn.

Editor, WOOD & WOOD PRODUCTS:

Referring to the August, 1953, issue of WOOD & WOOD PRODUCTS, we are interested in the article by Thomas A. Dickinson on casting resins.

There are two things we would like to know. One is, if possible, the firms doing this type of work or where we can secure this information. We would also like to have Mr. Dickinson's address to secure additional information on the process itself.

—H. H. Co., Wis.

Wants Sawmll Plans

Editor, WOOD & WOOD PRODUCTS:

We are interested in obtaining building plans for a sawmill and sawmill office.

—W. L. Co., S. D.

The Anderson Coach, produced by Anderson Coach Company, East Tawas, Mich.

What! No Nails?

That's right—nails for structural use have been outlawed in the Anderson Coach! Dielectric wood welding with Cyanamid's URAC® Resin 185 makes joints actually stronger than the wood itself . . . incomparably stronger than nailed joints.

This moisture-resistant urea-formaldehyde resin adhesive makes bonds that will not buckle, weaken or delaminate even when soaked in water and various acids! Look at these typical tests made by Anderson:

- Five pieces of spruce bonded vertically to a flat piece of birch plywood and submerged in water in December, 1949, are still solidly bonded.
- So are pieces of birch and spruce bonded to fir plywood and sealed in a jar containing ammonia and water in April, 1952.
- Similar tests made in solutions of 100% and 50% muriatic acid have affected the wood but not the bond!

The use of URAC 185 is typical of the advanced construction methods that make the Anderson Coach one of the best trailers on the market. Stressed-panel construction of sidewalls, roof and platform, securely bonded with URAC 185, makes the Anderson Coach stronger and safer.

If you, too, want strong, sure bonds—even "nail-less welding"—write for complete information on how, where and why you can use URAC 185 in assembly gluing of wood, or the laminating of veneers, hardboards, plastic laminates, etc.

URAC 185 being applied to 2x6 beams and cross pieces by tube with roller.

AMERICAN Cyanamid COMPANY

PLASTICS AND RESINS DIVISION

30A Rockefeller Plaza, New York 20, New York

In Canada: North American Cyanamid Limited • Royal Bank Building, Toronto, Ontario
5550 Royalmount Avenue, Montreal, Quebec

CURRENT LUMBER PRICES

These prices are made available by George Land, publisher of the weekly *Hardwood Market Report*, in his copyrighted issue of January 9, 1954. For the entire list, contact Mr. Land, Box 5716, Memphis 4, Tenn.

Note: Each price change from preceding issue is marked by an asterisk (*).

SOUTHERN HARDWOODS

F.O.B. mills—Texas and Louisiana area. Estimate of present mill point average market price, to consuming trade on band-sawn Southern Hardwoods in carload quantities, random widths and lengths, rough air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

	FAS	No. 1C	No. 2C
ASH—FIRM TEXTURE			
4/4-in.	160	120	63
6/4-in.	170	125	67
8/4-in.	190	150	80
BASSWOOD			
4/4-in.	160	125	83
6/4-in.	170	135	87
8/4-in.	180	145	90
BEECH			
4/4-in.	125	100	55
6/4-in.	140	110	60
8/4-in.	167	127	72
CHERRY			
4/4-in.	220	150	90
6/4-in.	240	170	95
8/4-in.	250	180	100
RED GUM—PLAIN			
4/4-in.	205	150	75
6/4-in.	230	170	75
RED GUM—QUARTERED			
4/4-in.	220	165	75
6/4-in.	250	190	90
8/4-in.	260	200	95
SAP GUM—PLAIN			
4/4-in.	125	105	52
6/4-in.	138	118	55
8/4-in.	155	130	
HACKBERRY			
4/4-in.	117	97	67
6/4-in.	[illegible]	2	[illegible]
8/4-in.	[illegible]	12	75
SOFT MAPLE—WHAD			
4/4-in.	130	110	67
6/4-in.	145	120	77
8/4-in.	165	135	80
SOFT MAPLE—WHND			
4/4-in.	115	90	60
6/4-in.	130	105	75
8/4-in.	135	110	80
RED OAK—PLAIN			
4/4-in.	175	100	72
6/4-in.	190	130	
8/4-in.	200	140	
WHITE OAK—PLAIN			
4/4-in.	185	110	72
6/4-in.	200	140	
8/4-in.	205	145	
PECAN			
4/4-in.	112	92	50
6/4-in.	130	110	60
8/4-in.	155	130	65

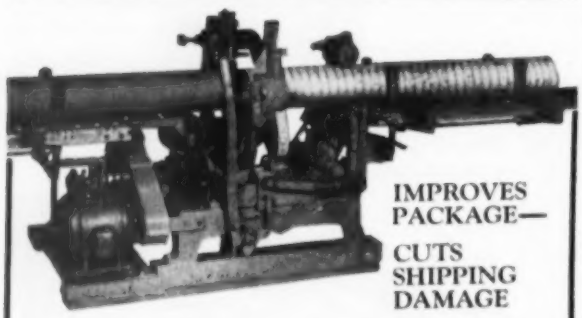
	FAS	S&S	No. 1C
POPLAR—PLAIN			
4/4-in.	170	160	130
6/4-in.	185	175	140
8/4-in.	205	195	150

	FAS	No. 1C	No. 2C
SYCAMORE—PLAIN			
4/4-in.	115	95	60
6/4-in.	127	107	62

TUPELO—PLAIN			
TUF TEXTURE—DEEP SWAMP			
4/4-in.	125	105	52
6/4-in.	138	118	55
8/4-in.	155	130	
WILLOW			
4/4-in.	135	115	50
6/4-in.	142	122	67
8/4-in.	150	125	70

APPALACHIAN HARDWOODS

F.O.B. mills—Johnson City, Tennessee area. Estimate of present mill point average market prices on sales to consuming trade on band-sawn Appalachian Hardwoods in carload quantities, random widths and lengths, rough air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars upper bracket grades premiums are frequently being paid.



IMPROVES PACKAGE—

CUTS SHIPPING DAMAGE

Use the PIERCE Model D-S Wrapping Machine and Save Time-Labor-Material

The Pierce Model D-S spiral wrapping machine is a production machine that wraps packaged lumber, including flooring, trim, slats, dimension stock and molding, in seconds. Each layer of paper is automatically glued to the preceding layer. The tight binding prevents any internal movement of individual pieces during shipment—and the customer gets clean, protected stock. Model D-S available on sale or lease terms.

Write for specifications • Samples wrapped, no charge

PIERCE WRAPPING MACHINE COMPANY

Builders of production wrapping machinery since 1910

1100 E. 31st Street La Grange Park, Ill.

JUST ADDED:

4 MORE DRY KILNS. Our Capacity now 1¼ Million Bd. Ft. per Charge.

WINTER'S HERE . . Loggers are Coming Out of Woods . . . **BUT WE NEVER STOP MANUFACTURING** Ponderosa and Sugar Pine from our own large resources . . top quality kiln-dried interior trim, jambs, frames, incense cedar venetian blind slats, glued-up panels, cut stock, box shook . . .

WHAT YOU WANT, WHEN YOU WANT IT. RALPH L. SMITH IS YOUR DEPENDABLE SOURCE OF SUPPLY.

Mixed Cars to the Trade, Our Specialty

The Ralph L. SMITH Lumber Company

Mills at **Anderson** and **Castella**

Sales Office at **Anderson, California**

WPA Western Pine Association

SUGAR PINE....PONDEROSA PINE....DOUGLAS FIR
WHITE FIR....INCENSE CEDAR

TOUGH ASH

	FAS	FIF	No. 1C	No. 2C
4/4-in.	170	160	115	68
6/4-in.	190	180	130	75
8/4-in.	200	190	150	85

BASSWOOD

				No. 2A
4/4-in.	180	170	130	88
6/4-in.	190	180	137	90
8/4-in.	195	185	147	96

BEECH

				No. 2C
4/4-in.	145	135	110	65
6/4-in.	160	150	120	75
8/4-in.	170	160	130	80

BIRCH

4/4-in.	265	255	150	80
6/4-in.	275	265	160	85
8/4-in.	280	270	165	90

BUCKEYE

4/4-in.	135	125	100	65
6/4-in.	165	155	120	73
8/4-in.	170	160	125	78

CHERRY

4/4-in.	230	220	150	90
6/4-in.	250	240	170	95
8/4-in.	260	250	180	100

CHESTNUT

	FAS	No. 1C	FAS WHND	1C & B WHND
5/4-in.	170	120	137	127
6/4-in.	175	125	142	132
8/4-in.	180	130	152	142

HICKORY

	FAS	FIF	No. 1C	No. 2C
4/4-in.	125	115	75	53
6/4-in.	145	135	86	58
8/4-in.	170	160	90	60

HARD MAPLE

4/4-in.	205	195	135	80
6/4-in.	220	210	155	84
8/4-in.	225	215	160	90

SOFT MAPLE

4/4-in.	165	155	115	67
6/4-in.	175	165	135	69
8/4-in.	180	170	140	75

RED OAK—PLAIN

4/4-in.	185	175	120
6/4-in.	200	190	140
8/4-in.	215	205	145

WHITE OAK—PLAIN

4/4-in.	200	190	125
6/4-in.	220	210	145
8/4-in.	225	215	155

WHITE OAK—WHND

	FAS	FIF	C & B	No. 1C
4/4-in.	125	115	95	90
6/4-in.	150	140	120	115
8/4-in.	160	150	130	120

YELLOW POPLAR

	FAS	FIF	No. 1C	No. 2A
4/4-in.	210	200	138	88
6/4-in.	220	210	150	92
8/4-in.	225	215	155	96

POPLAR SQUARES

	FAS	No. 1C & SD
4x4-in.	245	175
6x6-in.	280	190
8x8-in.	340	240

WALNUT—STEAM TREATED

	FAS 6"&up	FIF 6"&up	No. 1C	No. 2C
4/4-in.	370	325	180	75
6/4-in.	395	350	215	90
8/4-in.	420	375	235	95

Walnut list reflects average fob mill, all areas. Basing point not generally observed.

NORTHERN HARDWOODS

Estimate of present f.o.b. Wausau, Wisconsin mill point average market prices to consuming trade on band-sawn Northern Hardwoods in carload quantities, random widths and lengths, rough air dried and graded in accordance with NHLA rules on inspection. Prices in dollars per M ft. On straight cars of upper bracket grades premiums are frequently being paid.

BROWN ASH

	FAS	No. 1C	No. 2C
4/4-in.	155	107	75
6/4-in.	165	122	85
8/4-in.	170	132	90

BASSWOOD

4/4-in.	191	131	89
6/4-in.	201	141	96
8/4-in.	206	151	98

BEECH

4/4-in.	145	100	68
6/4-in.	160	115	78
8/4-in.	165	120	80

BIRCH

4/4-in.	296	151	81
6/4-in.	306	166	91
8/4-in.	311	181	100

ROCK ELM

4/4-in.	150	120	66
6/4-in.	160	140	76
8/4-in.	165	150	81

SOFT ELM

4/4-in.	140	120	72
6/4-in.	150	130	82
8/4-in.	155	135	87

HARD MAPLE

4/4-in.	196	131	78
6/4-in.	206	141	81
8/4-in.	216	151	88

SOFT MAPLE

4/4-in.	160	125	78
6/4-in.	175	135	86
8/4-in.	190	145	93

RED OAK

4/4-in.	186	126	78
6/4-in.	196	146	83
8/4-in.	206	156	88

it's the "cut" that counts . . .

Wood parts from Gamble Brothers go together on your assembly line quickly, easily, and accurately . . . because they are made to your *exact* specifications, fully- or semi-machined, solid or laminated. No trimming, no patching, no splitting. All parts are thoroughly kiln-dried to minimize shrinkage and warping.

Remember . . . *it's the cut that counts* . . . and *precision and dependability are guaranteed* when you rely on GAMBLE BROTHERS' more than fifty years' experience in wood engineering.

WRITE OR PHONE TODAY!

Engineered Wood Parts in Southern and Appalachian Hardwoods, Walnut, or Mahogany.

GAMBLE BROTHERS, Inc.

Offices and Main Plant: Louisville 9, Ky.
DIMENSOWOOD Division: Montgomery, Ala.

GAMBLE BROTHERS GB GUARANTEED BOND INCORPORATED

The lumber business has as many colorful gimmicks as a woman's purse. A logger doesn't say "Put the boom in place." He hollers "Hang the boom to it!" Know what a **hookaroon** *is? It's a short pole with a curved steel spike for handling cross-ties, poles and posts.*

The woods are also full of many kinds and grades of merchantable timber manufactured into all lumber and wood items industry uses. And it finds many distinct advantages buying through the nationwide Pamudo organization.

FIR PLYWOOD AND LUMBER PRODUCTS THROUGH WAREHOUSES AND DIRECT CARS FROM TACOMA.

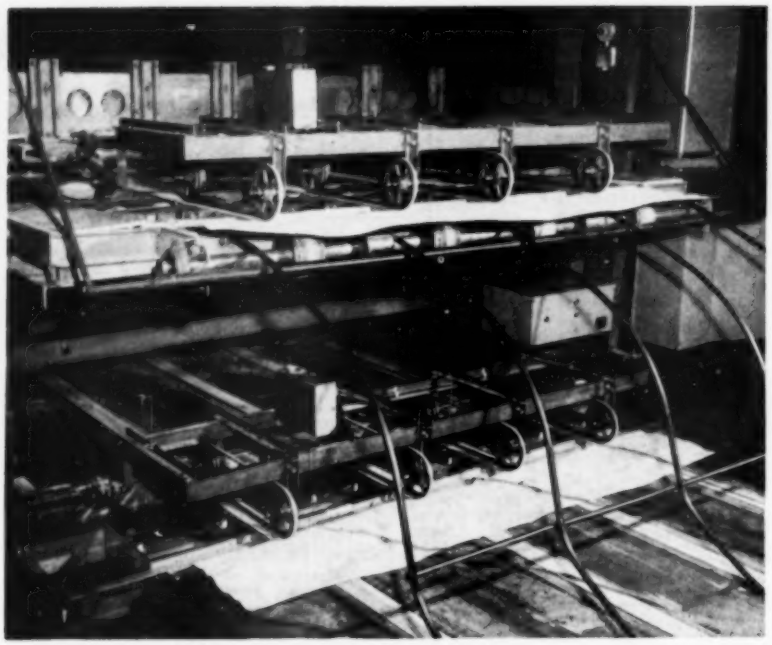
Sales Agents, Hardel Mutual Plywood Company
Olympia, Washington

Pamudo
PACIFIC MUTUAL DOOR CO.
General Office
RUST BUILDING, TACOMA 1, WASHINGTON

FROM TACOMA: Straight and Mixed Cars • Lumber and Lumber Products • Mouldings Cut-to-Size Industrial Plywood Cut Stock • Fir Plywood

WAREHOUSE STOCKS
PLYWOOD • DOORS • MOULDINGS
STOCK MILLWORK

WAREHOUSES
• St. Paul 4 • Chicago 38
• Kansas City 5, Kan. • Baltimore 31
• Elizabeth, New Jersey



"TWO CHANNEL" INSTALLATION of continuous moisture detector in modern plywood plant. Main control unit (upper right) handles signals from two electrodes or scanning devices shown in foreground. Latter operate independently and may also be used for separate moisture levels. Depending on proximity of dry lines, up to five channels may be operated from one main control unit.

MOISTURE CONTROL FOR VENEER GLUING

In his December, 1953, article, "Redrying Veneer for Gluing," Thomas D. Perry told WOOD & WOOD PRODUCTS readers that an approximate standard range for veneer to be glued with soybean glues should be from 3% to 5% moisture content. In doing so, he overlooked the well-known fact that soybean glues, without sacrificing durability or strength, are unusually tolerant of higher than normal moisture content in veneers.

The point was brought up in a letter received, following publication of the article, from John T. Laucks, of Laucks Laboratories, Inc., Seattle, Wash. Backed up by the 45-year experience of his organization as a pioneer in the development of soybean adhesives, Mr. Laucks pointed out that a moisture content of 5% to 6% provides much better adhesion and less "fall-downs" due to breaks or splits.

He further stated that even an 8% to 10% moisture content is not considered excessive in the sense that it will cause "blows" (steam blisters in hot pressing), and that "the trick is simply to make sure that no spots contain more than 10%."

To which Author Perry adds: "In the light of this competent authority's opinion, the writer should change his moisture content range from 3%-5% up to approximately 5%-8%. The 8% top limit is indicated to keep well below 10%, the border line for formation of steam blisters in hot pressing."

In the final paragraph of his December article, Mr. Perry also stated: "The ranges of moisture content required for good gluing, between 3 and 10%, are a bit beyond the accurate range of the ordinary methods." This statement overlooked the "continuous moisture detector" developed by the Laucks firm and successfully used by many plywood plants, most of them on the West Coast. It accurately indicates the moisture content of veneer as it passes through the field of its electronic vision.

The device, illustrated herewith in a "two channel" installation, extends the field of moisture measurement across the entire sheet of veneer so that a concentration of moisture at any point will be automatically detected. It is said to be accurate within a range of 0.5% up to 30% moisture content.

Since it automatically calls attention to any sheet of veneer on the production line that does not come within the standard limits of moisture content established for good gluing, the Laucks device is regarded as a distinct contribution to the science of accurate moisture control. It can be installed in the outfeed line of the dryer or on the infeed line to the glue spreader or hot press.

4 sales aces

Plywood has come a long way since the early days of the industry.

Here at Associated, in addition to standard, high quality Douglas fir plywood, we manufacture specialty panels. These products present new sales and profit opportunities to you. They are:

SEA SWIRL decorative fir plywood. Interior and exterior, in 4'x8' panels (other sizes to order).

KNOTTY SEA SWIRL decorative fir plywood. A companion product to select *Sea Swirl*, and now being manufactured in response to steady requests.

BIRCH faced plywood with solid cores. In standard size panels, ¼" and ¾" thickness.

PHILIPPINE MAHOGANY faced plywood with solid cores. A companion product to Birch faced panels.

APMI quality plywood products are available at company warehouses, and through selected independent jobbers. Your inquiries are welcomed.

BRANCH SALES WAREHOUSES:

4268 Utah St, St. Louis, Missouri
4814 Bengal St., Dallas, Texas
4003 Coyle St., Houston, Texas
Raleigh, North Carolina
1026 Jay St., Charlotte, North Carolina
Worley Road, Greenville, South Carolina
925 Toland St., San Francisco, California
Eugene, Oregon
Willamina, Oregon

SALES OFFICES:

31 State St., Boston, Massachusetts
595 E. Colorado St., Pasadena, California

APMI

ASSOCIATED PLYWOOD MILLS, Inc.

General Offices: Eugene, Oregon | Plywood plants at Eugene and Willamina
Lumber mill at Roseburg

To mention dimension means

Morgan Manufacturing Co., Inc. BLACK MOUNTAIN, N.C.

Morgan Manufacturing Co., Inc. BLACK MOUNTAIN, N.C.

The Nation's largest and most diversified producer of **WOOD DIMENSION** for furniture makers and other industries

Roll Up Your Sleeves — and Sell!

Says a current Saturday Evening Post advertisement: "1954 is here and competition is back. It should separate the men from the boys, the buyers from the browsers, the facts from the fables."

Last month on this page we put it in these words: "There is plenty of goods, and consumers have the money to buy. But the consumer is in a 'show me' mood. The 'era of persuasion' is here . . . If you want him to buy what you have, you've got to sell him. If what you make fails to come up to his standards, he'll buy something else."

Then along came Stephen H. Millender, president of the Southern Furniture Manufacturers' Association, speaking at the 1954 Winter Market in Chicago. Pointing out that the industry now faces the highly competitive situation where production facilities exceed demand, he said it this way: "The obvious answer is that we have got to do a job in selling, and outsell other competitors for the consumer's dollar."

In short, the time has come for the management of every wood-producing and every wood-converting operation to take a good look at things and find out what has to be done to get that operation squared away for the tough, competitive selling times we now face. At the risk of repeating ourselves, we suggest that if you want a fair share of the consumer's dollar from now on you'll have to be more particular about *what* you sell him as well as how you sell.

There has been considerable emphasis on production during the past 10 or 12 years. Much has been done to improve production machinery and techniques. But let's not kid ourselves into believing the whole job has been done. There's still room for tremendous improvement in all segments of the wood industry—all the way down the line from raw material to finished product. If we don't catch up soon, it may be too late for some of us. Competition won't wait!

Action now on the basic problems listed here will go a long way toward helping you swing your operation into the clear:

1. *Check your raw materials*—are they the best you can obtain for the end-product?
2. *Check your plant layout*—is it streamlined for maximum efficiency, minimum lost motion and waste?
3. *Check your workers*—are they properly trained to understand the need for quality and cost control, for speed, for maximum effort, and do they know what these things mean to *them* as well as to you?
4. *Check your machines and equipment*—can you save money, cut costs, speed up output, produce better finished goods with more modern, efficient units?
5. *Check your management and marketing policies and methods*—are they geared to the new, more competitive pace of the times?

What we advocate here has been done, in a greater or lesser degree, by many Wood & Wood Products readers. They're ready now to sail into the competitive selling battle swinging both fists. But where little or nothing has been done, the urgency of getting down to the roots of the problem must be apparent. Take these steps and your business will be in a better position to make money in the "era of persuasion" that now challenges the ingenuity, ability and resources of the whole wood industry.

Then roll up your sleeves and sell!

(Comments, and inquiries regarding distribution of reprints of this message to employees and others, are invited.)

RIGHT—Final assembly line on seats for chair-desk units. Automatic boring machine and riveter complete the job.

BELOW—Back rail of seat for school chair-desk being edge sanded

By R. H. DAVIS
Budget Director, American Seating Co.

Participants Eager to Cut Costs and Raise Standards at American Seating Co.—They Earn Bonus as Reward

This Middle Management Incentive Plan Gets Results

PLIED-UP theater seat backs being removed from deep-curve hot press

INCENTIVE PLANS are nothing new to the American Seating Co. A basic policy of management for many years has been to provide the opportunity for additional earnings to all employees wherever feasible. As a result of this policy, more than 84% of our plant employees are covered by either a direct or indirect incentive plan and the balance, primarily in the skilled trades, is covered by a bonus plan.

Our company was organized in 1886. As the world's leading manufacturer of public seating, we are owned by approximately 2,700 stockholders and have more than 2,000 employees. All manufacturing takes place in our Grand Rapids (Mich.) plant, which covers more than 20 acres with approximately 750,000 sq. ft. of manufacturing space and an additional 500,000 sq. ft. devoted to warehousing.

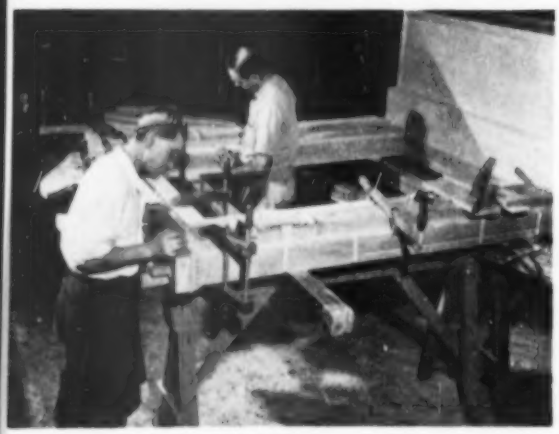
Because of the nature of our products, we work in wood, metal and iron. There are more than 350 different job skills among our plant employees.

The American Seating Co. set up its Middle Management Incentive Plan on October 1, 1950. The installation of this plan was a final step in the development of two major programs, namely:

1. An adequate compensation program for the middle management group;
2. A comprehensive program for planning and realizing more profitable operations.

The announced objectives of the plan are four in number:

1. To tie members of middle management into a closer relationship with the successful operation of the company;
2. To develop them as co-managers of the enterprise;
3. To promote the realization of



LEFT—Assembly operation on combination altar and reredos

RIGHT—Trimming pew ends on mitre saw to fit base assemblies for church pews

Line	Item	1ST. QTR. Jan.	Feb.	Mar.	2ND QTR. Apr.	May	June	3RD QTR. July	Aug.	Sept.	4TH QTR. Oct.	Nov.	Dec.
A	Factory Standard Costs	$500,000	$510,000	$600,000	$510,000	$550,000	$650,000	$390,000	$660,000	$780,000	$ 630,000	$500,000	$520,000
B	Actual Factory Costs	495,000	500,000	595,000	505,000	565,000	655,000	380,000	620,000	755,000	610,000	490,000	515,000
C	Cost Savings (A-B)	5,000	10,000	5,000	5,000	(15,000)	(5,000)	10,000	40,000	25,000	20,000	10,000	5,000
D	50% Bonus Share (C x 50%)	2,500	5,000	2,500	2,500	(7,500)	(2,500)	5,000	10,000	12,500	10,000	5,000	2,500
E	Cumulative Earned Bonus	2,500	7,500	10,000	12,500	5,000	2,500	7,500	17,500	30,000	40,000	45,000	47,500
F	Cumulative Potential Bonus	10,000	20,000	30,000	40,300	50,600	60,900	71,200	81,500	91,800	102,100	112,400	122,700
G	"Payoff" - Earned Bonus Percent	25%	37.5%	33.3%	31%	9.9%	4.1%	10.5%	21.5%	32.7%	39.2%	40.0%	38.7%
H	Quarterly Prepayments			10,000						20,000			17,500
I	Balance Due Participants	2,500	7,500		2,500	(5,000)	(7,500)	(2,500)	7,500		10,000	15,000	
J	This month's earned bonus percent	25%	50%	25%	24.3%	(72.8%)	(24.3%)	48.5%	97.1%	121.4%	97.1%	48.5%	24.3%
	Monthly Analysis of Savings (or Loss) by Major Items of Cost												
K	Direct Labor	(1,000)	(1,500)	(2,500)	(500)	(1,500)	(1,000)	1,000	1,500	1,500	2,000	1,000	1,500
L	Direct Material	1,000	2,000	(1,000)	2,000	(2,000)	1,000	3,500	4,500	6,000	3,000	1,000	1,000
M	Burden	7,000	10,500	8,000	3,000	(12,000)	(6,000)	4,000	12,000	17,000	14,000	7,500	1,500
N	Scrapped Parts	(2,000)	(1,000)	500	500	500	1,000	1,500	2,000	500	1,000	500	1,000
O	Total Savings (or Loss)	5,000	10,000	5,000	5,000	(15,000)	(5,000)	10,000	20,000	25,000	20,000	10,000	5,000

EXHIBIT I—Hypothetical example of how bonus computations are made on a cumulative year to date basis

planned profits through the medium of better planning and more stringent cost control;

4. To reward them by sharing with them the savings, or cost reductions, they effect.

The plan, in brief, establishes cost standardds for all elements of manufacturing costs and, insofar as it is practical, makes use of existing standard costs and budgets. The participants share in cost savings whenever actual costs are less than applicable cost standards in total.

Prerequisites to the establishment of this plan were, first of all, a good system of standard costs and, secondly, flexible budgets for each segment of the business. The latter are essential to the establishment of fair standards under fluctuations in volume and product mix. We had been working with these systems for several years.

Also of prime importance to the proper functioning of the plan is administration. This is the primary responsibility of a committee consisting of the vice-president of manufacturing, the vice-president of finance, and the budget director. This committee has the responsibility of determining or approving the standards against which performance is measured, including the changing of standards when necessary to reflect changed or extraordinary conditions.

Obviously, if conditions change, changes in standards are necessary to maintain the same incentive opportunity or, in other words, to maintain the relationship between earnings and effort under the plan.

All employees on the exempt salary payroll participate in the plan on the basis of their potential influence on cost control.

Individual maximum bonuses are established for the various positions at either 15%, 25% or 35% of *base salary*, depending on their relative potential contributions toward cost control. Employees in positions with the greatest potential effect on cost control are in the 35% class, while those with moderate potential effect are in the 25% class and those with the least potential effect on cost control are in the 15% class.

This classification has three advantages:

1. It includes all exempt salaried employees in the plan, thereby inviting cooperation from all areas.
2. It gives the greatest incentive to a comparatively small group having the greatest potential influence on cost control.
3. It places the large group of operating supervisors all on the same basis of participation (in the 25% class).

Who goes into what class is determined by a study of the job content as described in *position descriptions* and has nothing to do with how well the individuals are performing their work. Recognition of personal ability is reflected in salary through the

MONTHLY EXPENSE BUDGET AND PERFORMANCE REPORT

Budget Base 10,000 D.L. Std. Hrs.

Dept. 23 Month of September Actual for Month 22,409 D.L. Std. Hrs.

ACCT. NO.	DESCRIPTION	ACTUAL EXPENSE Dept. Labor	Other Labor	Material	Total	BUDGET ALLOWANCE	VARIANCE THIS MONTH Over	Under	VARIANCE TO DATE Over	Under
41	Material Handling	1836			1836	1504	332		563	
42	Housekeeping	677	70	5	750	698	58		106	
44	Tool Crib Attendants		85		85	34		11		46
45	Building Repairs		127	66	193	123	70		43	
46	Inspection	3182			3182	3126	56			523
47	Machinery Repairs	2	2417	1787	4206	4406		194	1062	
49	Stockkeeping		729		729	498		231		468
50	Trucks, Belts, Tools & Gears	44	147	742	933	1178		239		72
54	Repairs & Rework to Product	3240			3240	3819		79		1424
58	Supplies			2233	2233	2801		568	68	
59	Utility Labor	4220			4220	4630		410		2447
60	Exhaust, Vent. & Air Cond.		15		15	130		115		385
61	Checking	69			69	82	47		19	
69	Patterns, Jigs, Gauges & Temp.	86	791	19	896	1273		412		578
78	Occupational Wage Guarantee	737			737	878	186		427	
80	Die Repairs		403	11	414	755		269		543
84	Gas, Carbide, Oxygen & Weld.Rod			2409	2409	1748	661		49	
90	Abrasives (Inc. Stars & Grit)			238	238	381		143	210	
91	Feeding Hatchers									
92	Adjust & Set Up Machines	2358			2358	2546		188		827
93	Idle Time	462			462	2586	1035		1678	
95	Job Training	389			389	186	203		807	
96	Racks, Benches & Equipment	1	1438	216	1655	1781		66		792
	Totals Net Variance	17,928	6,362	7,089	31,376	34,248	2618	3187 569	5084	5064 3436
REMARKS	Percent of Standard				98.5%	100.0%		1.5%		30%

EXHIBIT II—Compares actual burden expenditures of past month with standard burden allowance. Also shows month's and total variances

EXHIBIT III

AMERICAN SEATING COMPANY

INTRA-COMPANY CORRESPONDENCE

To Joe Jones **Date** 10/1953

From The Management Incentive Plan Administration Committee

Subject Statement of Bonus Under the Management Incentive Plan—First Nine Months, 1953

Your bonus for the first nine months is $313.92. This amount, less the quarterly prepayments you received on April 30 and July 31, will be included in your paycheck of October 31.

The amount of your bonus payment was determined as follows:

January, February, March, each $100; April, May, June, July, August, September, each $110

Your Total *Potential* Bonus for the First Nine Months	$ 960	
First Nine Months Cumulative *Earned* Bonus Per Cent	32.7	%
Total Earned Bonus—First Nine Months	$ 313.92	
Deduct Prepayments for First & Second Quarters	100.00	
Balance of Earned Bonus to be Paid October 31	$ 213.92	

merit rating plan. Extra pay for merit is on top of base salary and does not enter into computation of incentive pay.

The maximum bonus distribution is limited to the total potential bonus of all participants.

The incentive bonus is based on actual performance against standards which are established for all direct and indirect factory costs. At the beginning of the year, standards are established for all factory costs.

Standard costs used for direct materials and direct labor are the same standards developed for use in the company's cost system and direct labor incentive plan. Standard costs for indirect expense are the total of the departmental variable expense budgets which are adjusted each month for volume and product mix.

Cost variances over which the participants have no control are eliminated in determining performance and computing bonus under the plan.

This is done in vairous ways, for example:

(a) The amount of a general wage increase is added to standard cost.

(b) The actual cost of such non-controllable items as taxes, insurance and pension expense, etc., is used as the standard cost of these items.

(c) Appropriate additions to standard cost are made for unusual, unforeseen expenses beyond control of the participants.

(d) The actual price of raw materials is used as the standard material cost.

The plan is an annual plan with bonus calculations made on a cumulative basis for the calendar year to date. Bonus prepayments are made quarterly. Poor performance in any month must be offset by equivalent plus performance in other months before a bonus is earned.

Participants derive benefits for at least six months from continuing cost reductions they effect. In order to avoid the holding back of cost savings ideas until the following year, the participants are guaranteed that the old standard cost will be used in computing their bonus for at least six months, even though the effective date is within six months of the end of the year when standard costs may be changed.

Exhibit I helps to explain more fully how the bonus is computed and distributed. It shows how the bonus is computed on a cumulative year-to-date basis and how prepayments are made quarterly. The figures are hypothetical and for illustrative purposes only.

Starting with January, let's assume that total factory standard costs were $500,000 (line A). Total *actual* factory costs for the month were $495,000 (line B).

The difference (line A less line B), or $5,000, is the cost saving for the month (line C). Half of the saving, or $2,500, is shared with the participants as their bonus (line D). This bonus share is placed in a pool which we call the cumulative earned bonus. (line E).

The individual potential bonuses of all participants are added to get the total potential bonus. Let's assume this to be $10,000 for the month (line F). The total earned bonus of $2,500 (line E) divided by the total potential bonus of $10,000 (line F) equals 25%, the earned bonus percent (line G).

This earned bonus percent is calculated monthly and announced to the participants who can then compute their individual earned bonuses for the month by multiplying their individual potential bonuses by the earned bonus percent.

To illustrate, if Foreman Jones has a base salary of $400 a month and is in the 25% class, his individual potential bonus is $100. Since the earned bonus percent was 25%, his individual bonus dollars amount to $25 for the month.

Lines H & I demonstrate how the quarterly prepayments are made. Line

Continued on Page 57

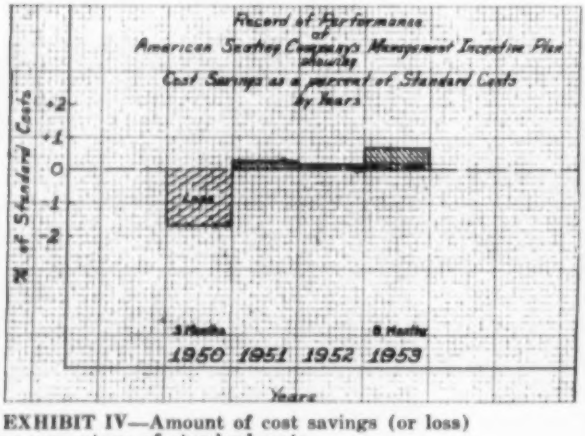


EXHIBIT IV—Amount of cost savings (or loss) as percentage of standard costs

EDGE SHAPING operation on desk top for desk-chair unit

Study Need for Standards in Small Sawmill Operations

ASME Explores Problems of Machinery Accuracy and Saw Blade Design for Control of Lumber Thickness—Also Maintenance

MODERN Wheland 6 ft. No. 45 roller bearing band mill at Gennett Lumber Co., Ellijay, Ga.

APPEALS FOR STANDARDIZATION projects sometimes come from the most unexpected sources. So said Cyril Ainsworth, technical director of the American Standards Association, at the annual luncheon of the Wood Industries Division of the American Society of Mechanical Engineers.

He cited a recent request from a lumber procurement division of the federal government, which specifies and purchases large quantities of lumber from concentration yards. These concentration yards, in turn, receive the product of numberless small sawmills in their immediate area, where transportation costs to a central point are reasonable.

Before these concentration yards were established, the government agencies attempted to buy direct from the sawmills, but the plan wouldn't work. Few if any, sawmills had sufficient volume of production, and the inevitable assortment of available species, grades, lengths, widths and thicknesses failed to comply with government specifications, or even to approach them.

Even when sawmills undertook to saw to the specifications, the situation was not much better, and log supplies in any one sawmill were too irregular and often not adapted to the requirements. The concentration yard proved to be a much better source of supply than any single sawmill. As the months slipped by deliveries from these concentration yards continued to vary from any conceivable standards and were accepted with reluctance. If any other source of supply had been available they would have been forced out of existence. As it was they had to be endured and tolerated.

About this time, early in 1953, the government agency brought this problem to the American Standards Association and requested its help in standardizing small sawmills, either in dimensional tolerances, or in sawmill equipment, or in sawing techniques, perhaps in all three categories. Since the A. S. A. had an inadequate staff to develop such a project, it was turned over to the Wood Industries Division of the A. S. M. E., which works closely with the A. S. A.

In order to explore the possibility of such standardization, both sessions of the Wood Industries Division, held in New York City last December, were given over to papers on small sawmills. Authors were carefully selected from among those who had had actual and practical experience with the operation or small sawmills, as well as in the making of equipment for such small sawmills. A brief outline of these papers:—

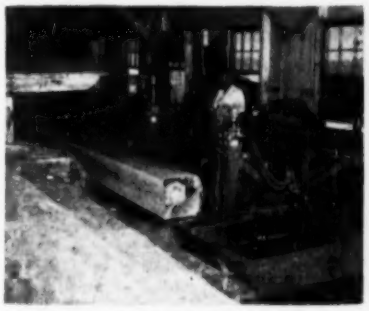
Building Accuracy into Small Sawmills

This paper was by Ernest A. Clevenger, Sr., vice-president of the Corley Manufacturing Co., Chattanooga. He pointed out that the size or capacity of a sawmill is entirely independent of the grades of lumber produced, and that just as good quality lumber can be made in a small sawmill as on a larger unit. However, the equipment must be of proper design and well maintained, and the sawyers must have the necessary experience and "know-how".

Stated in another way; it is the obligation of the sawmill maker to manufacture his equipment so adequately that it will cut accurate lumber, even when used by an inefficient crew. The cab, feedworks, carriage, head blocks, and trackway of a small circular sawmill must be easily installable, so that they will function as an efficient unit. The mill must be in correct alignment from the start, and provided with adjustments to maintain this alignment in spite of wear and tear of service.

Proper "take-ups" for wear in all parts of the sawmill must be built into the machines, so that all adjustments are simple and positive. The author concluded:—

"A manufacturer of small sawmills can play an important part in keeping lumber waste at a minimum. He can do this by providing the operator with machinery that is capable of cutting accurate lumber throughout the lifetime of the equipment. This manufacturer cannot do the whole job, of course. However if the sawmill operator has a desire to cut good lumber, will properly care for his mill, and keep it in alignment, then he and the manufacturer can combine in reducing slab piles and seeing that the country receives a maximum amount of good lumber from the timber available."



CANT on Wheland carriage, Sledge Lumber Corp., is equipped with Cahoon non-defacing air dogs, air tapers and roller bearing setworks with air booster

Design of Saw Blades for Better Dimensional Control

This subject was handled by Dewey E. Gommel, director of research and development at the Atkins Saw Division of Borg-Warner Corp., Indianapolis. He emphasized the fact that the design predetermines what can be expected of the saw blade in obtaining better dimensional control of the lumber.

The saw blade and the kerf that it cuts are the two controlling factors: (1) in the efficiency of operation; (2) in the quality of the product; and (3) in the financial return on the investment. The improvements in saw blades in the last few years gives better dimensional control, provides smoother surfaces and encourages higher rates of production. Beyond that point, unless the saw machine is properly designed and operated at

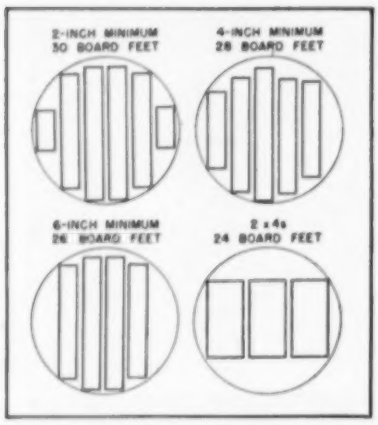


FIG. 1—Lumber yields for an 8 in. diameter log

favorable speed/feed ratios, the best saw blade in the world will give poor results.

Most circular saw blades in small sawmills are 50 to 60 in. diameter, to permit cutting 18 to 24 in. logs, and inserted teeth are strongly favored to facilitate maintenance and repairs. The average headsaw will run 400 to 600 rpm, giving rim speeds of 5,000 to 9,000 fpm, although some rims speeds may be as high as 15,000 to 20,000 fpm.

The saw blade for inserted tooth blanks must have just the right hardness for machining the tooth sockets as well as serving as a durable bearing for the teeth and holders. It must be flat before hardening and flattened after tempering. The tensioning of a circular saw blade is the method of stretching the steel in certain critical areas, so that the rim, as it stretches, will travel in the same plane when rotated at high operating speeds, which will inevitably produce graduated tensions inward toward the central shaft.

The headsaw is a ripsaw, cutting along the grain, and must have adequate gullets to remove the saw chips. These gullets must be properly rounded, since sharp corners may produce cracks. Stabilizing holes are frequently bored, one for each tooth, which reduce the amount of tension developed, since they keep the rim cooler.

The clearance in headsaws is usually 1/16 to 3/32 in. per side, but must be kept at a minimum, to conserve the width of the cut and still permit the saw teeth to move freely and without friction in the kerf slot. There may be some diversity of opinion as to the proper gauge (thickness) of a saw, but in general saws that are too thin tend to wobble and cut a thicker kerf than a heavier saw that runs in a true plane.

Inserted teeth of tungsten carbide greatly increase the working life of a saw. If high speed steel is used for teeth, sharpenings will be required frequently, as about 8 hours is a maximum operating cycle, if no dulling is caused by foreign particles in the wood.

Preventive maintenance is the best way to secure better dimensional control of the lumber.

Waste at Sawmills in Relation to Log Quality

This author, Fred C. Simmons of the Northeast Forest Experiment Station at Upper Darby, Pa., takes serious exception to the use of the term "waste", feeling that it connotes carelessness in producing unsalable and relatively useless overages.

Modern day practice indicates that much of the sawdust, slabs, and edgings can be converted into paper pulp, wood flour, fillers for plastics, bedding for dairies, agricultural mulches, etc. These avenues of disposal will require some segregation and involve some extra labor, but the returns will more than justify the additional work.

The ratio of useful lumber to disposable by-product will depend on the size, straightness and grade of the available logs. Another important factor is the permissable dimensions scheduled for the sawyer, of which a graphic example is shown in Fig. 1. It is to be noted that where 2 in. widths are allowed, a maximum yield is realized. An interesting tabulation is given in Table 1, indicating that the amount of sawdust is relatively uniform in different sized logs, but that the slabs, edgings, etc. are much greater in the case of small logs.

Another tabulation indicates the percentages of product developed per 1,000 bd. ft. of lumber produced by 4 hardwood sawmills in Maryland:

Lumber	**60.2%**
Slabs, Edgings, etc	**18.2**
Sawdust	**21.6**
	100%

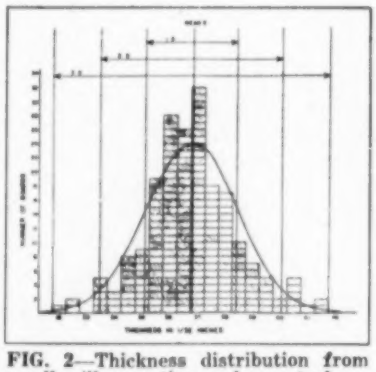


FIG. 2—Thickness distribution from small mill operating under controls

TABLE 1
By-products from Sawing Lumber per 1,000 bd. ft. of lumber sawed

Log Diameters	Slabs, Edgings, etc	Saw Dust
8 inch	54 cu. ft.	31 cu. ft.
11	42	29
14	33	28
17	28	28
20	24	28

(From a Texas sawmill.)

Total production was 95,000 bd. ft.

In his conclusions this author recommends that cutting schedules favor as small size boards as can be made acceptable to customers, really dimension sizes. He favors forgetting normal lumber standards of maximum obtainable widths and lengths and cutting crooked logs into shorter blocks before sawing on a bolter saw.

Another suggestion is taper sawing, parallel to the outside rather than to the heart of the log. The need of minimum saw kerfs is also stressed, which on a short log bolter saw with a smaller saw, may be as little as 3/16 in. Proper mill maintenance and sharp saws are of prime importance.

Better Yields Through Dimensional Controls

Prof. James S. Bethel, director of the Wood Products Laboratory, North Carolina State College, presented this paper. It is neither practical nor possible to operate a small sawmill and produce lumber of uniform thickness, since there are too many variables involved, even within the 4 to 8 hour cutting cycle (between sharpenings) of the average circular sawmill.

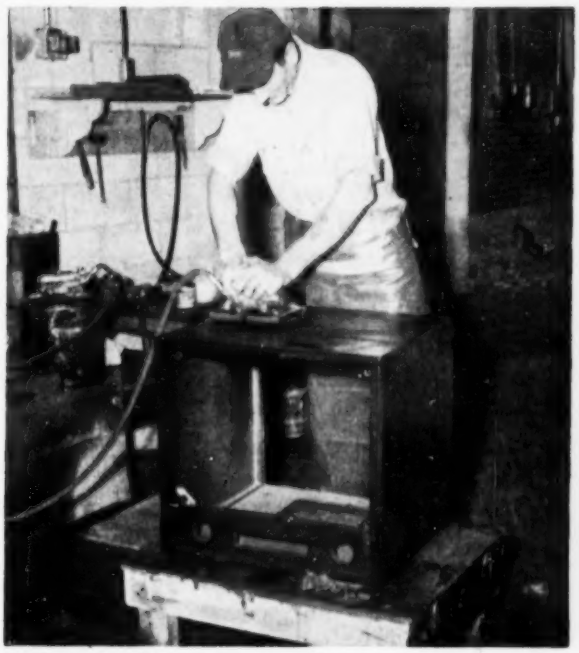
Some of these variables are the size, species and moisture content of the log; rate of feed into the saw; frequency of knots, splits and other defects; occurrence of abrasive obstacles or metal objects, which may seriously damage the saw teeth, etc. The sawmill operator is definitely "in the middle"; if an appreciable number of boards are too thin the customer will complain, and quite justly; if boards are too thick, valuable raw material is being wasted and profits will be sacrificed.

Methods of statistical control have been worked out, establishing a mean thickness, about 1-5/32 in., with standard deviations, which give the following results:—

Sawmill A	**0.05"**
B	**0.06"**
C	**0.07"**
deviation	**1.11" average**
	1.14 thickness
	1.17 (required

The performance of a mill operating

Continued on Page 59



LEFT—Table model TV cabinet receives final coating from spray gun at the Jasper (Ind.) Corp. RIGHT—Same model cabinet being sanded

Where Is Wood Headed in Radio-TV Cabinet Field?

Beauty Plus Low Tool-Up, Changeover Costs Enhance Position—Chipboard and Other Wood Products Gain

By ARNOLD F. HABIG
President, The Jasper Corp.,
Jasper, Ind.

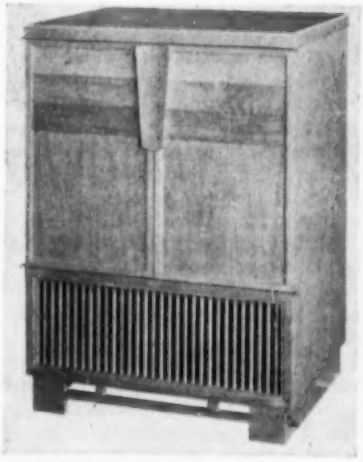
WITH THE ADVENT OF RADIO, wood and wood products constituted the basic cabinet ingredient almost exclusively. Gradually, the classic living room console diminished in size and importance, and radios became more and more prominent in the bedroom, kitchen, den, automobile and finally the farm tractor. At present, although radio sales are near record levels, wood cabinets represent a relatively small portion of their total.

The pressing question of whether television will follow a similar pattern is still a matter of conjecture. In any event, the wood industry has taken a firm hold on the television market, and while competition from substitute materials is growing rapidly, the innovations such as radio-phonograph combinations, high fidelity and color television tend to strengthen the position of the wood industry.

The story is an old one to the American competitive system. One hand pushes toward standardization and low costs to break the mass markets; the other fashions beauty and individuality in styling to create buying preference.

Television, while bringing together sound and sight appreciation, provides the perfect product for the appreciation of wood's two most desirable properties; superiority in acoustics and the natural beauty of the wood iteslf. Wood substitutes readily concede these advantages by striving constantly to impress with "as good as wood" advertising.

Supplementing these two highly desirable properties of wood is the industry's own effort to maintain a more flexible method of production. With the radio-television field in a constant state of flux, the emphasis is on smaller quantities and more models. This situation naturally strengthens the advantage already held by the wood manufacturer who has the low tool-up and changeover costs inherent in the flexible production of a modern wood cabinet plant.



BEAUTIFUL blonde 27 in. wood cabinet defies imitation

Thus, we will presume that as long as the cost spread between wood and substitute materials does not grow appreciably, and wood fabricators continue to stress a "cost consciousness" program, wood cabinets remain in an excellent competitive position in the radio-television field.

It can be assumed, and correctly so, that cabinet designers, as well as cabinet buyers, have always favored the wood products. The designer can only be influenced otherwise by a lack of buying preference. Therefore, with this in mind, the wood industry must

Continued on Page 60

Engineering Materials Handling for Profits

Research and Planning Are "Musts"—Building Design, Equipment Evaluation and Cost Control Are Factors

By R. FRANK WEBER

Supervisor, Materials Handling Research, International Harvester Co.

LIFT truck waits to pick up 500 ft. package of steel strapped flooring at Connor Lumber & Land Co., Laona, Wis.

NEVER HAVE INDUSTRIES in the United States and Canada had a better opportunity to plan and organize their operations for the era of industrial progress we are facing today. Nor have they ever been more receptive.

With the necessity to lower costs of production as a vital factor in the future trend of business, executives are convinced that more emphasis must be placed on improved methods in materials handling and they are giving their engineers plenty of encouragement and assistance. On recent trips throughout the country for both the military and for industry, I have been particularly impressed by the fast-growing interest on the part of management.

Through the Materials Handling Advisory Committee of the National Security Industrial Association and annual visits to military installations, I have kept informed of the activities and progress in materials handling of the military services.

All the services have shown a willingness to use the technical advice contributed by N.S.I.A. advisory committee, and they have developed in their own right many creditable achievements in the field of materials handling.

In view of this progress, a number of outstanding factors have come into prominence that have a great deal to do with present and future trends. These factors are:

1. Select the training of the plant supervisory groups to get their wholehearted interest and support in the materials handling program.
2. A continuous campaign on the part of management to maintain a high level of thinking and planning for a progressive handling system.
3. Elevate the position of the materials handling engineer and select these men with qualifications for staff functions.
4. Develop a materials handling cost control system that will place the responsibility for costs in each department with the respective foreman and give him the opportunity to control such costs. At the same time provide sufficient overall plant cost reports to keep management informed of the cost situation.
5. Expand research and development activities in the broad program of materials handling. Future trends will depend greatly on guidance directed by well organized laboratories and consulting groups.

To supplement these five factors and to keep pace with trends, we need the conference method of advancing knowledge, now receiving wide-spread recognition, planned by professional societies and colleges.

Research Pays Dividends

As a general rule, economies effected through materials handling research will repay at least three times for every dollar spent. A dollar return for every dollar spent might still be a favorable factor.

Much depends upon what is expected. There may be other essential results that will be of greater value than immediate savings. These factors might include a reduction of labor turnover, improved quality of product, better inventory control, or assisting the sales department to give better service to customers.

How should we determine if materials handling research will pay in any industry? A great deal of thought should be given this question. There will be resistance from sources within

HOW DO YOUR HANDLING METHODS STACK UP?

The experiences and observations of Mr. Weber, who has lived with materials handling problems since they were first recognized as such by International Harvester Co. more than 20 years ago, have marked parallel in lumber, plywood and all types of woodworking plants.

In the belief that another and fresh viewpoint will prove stimulating and beneficial to our management readers, the accompanying article explores: Keeping pace with trends; research; the planning phase of the materials handling program; coordination of building designs with materials handling; evaluation of equipment; and control of handling costs.

Only in recent years have manufacturers in the wood products industries become aware of the vital savings in time, labor and money which can be effected through proper and efficient methods of handling materials and supplies. For too long this phase of operations was given little more than lip service, but finally it has emerged as the answer in many cases to holding final costs in check to meet ever stiffening competition.

It's a problem which can never be regarded as finally and absolutely solved. New equipment and new methods are continually coming to light, and changes along the production line create new problems.—*The Editors.*

SIMONDS NEW "STAND-ALL" SAW BIT

(Patent Applied For)

An All-Purpose, All-Season Saw Bit that deflects dust from the swage of the shank or holder, reduces shank wear, keeps dust from spilling into the cut.

Men who try 'em – swear by 'em!

Mississippi: "They pull lighter and take a faster feed"

Alabama: "Cut 140,000 feet with one set . . . saw ran better and cooler"

Maine: "No rim heat or recutting sawdust with these bits in both oak and sapling pine"

Wisconsin: "Cut smoother and do not dodge knots"

New Hampshire: "Made my old saw run like new"

Most popular kerf sizes now available in Styles B, F and D and No. 2½, 3, 3½ and 4½.

SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASS.

Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon
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Simonds Divisions: Simonds Steel Mill, Lockport, N. Y.
Simonds Abrasive Co., Phila., Pa. and Arvida, Que., Canada

"STAND-ALL" BITS ARE DESIGNED FOR USE WITH YOUR PRESENT SAW AND WITH STANDARD "RED CIRCLE" SHANKS

LEFT — Loading strapped plywood in railroad car with lift truck

RIGHT — Crane being used to stack lumber in yard

many industries. The initial results may not be as beneficial as anticipated. There will be limitations to how far this research can go.

Before proposing a plan, you should have a good knowledge of what it will do for your operations. This kind of research is not limited to large companies only. One good man assigned to materials handling research in a small industry should pay dividends in the same proportion as a staff of research men in a large company.

Experience gained in the research laboratory has provided a sound basis for applying planned research thinking to present problems and future progress. One phase of a research program is to provide a plan for future guidance. What are our long-range objectives? In our desire to concentrate on present projects, we might lose the perspective of a research group—to initiate and develop methods in advance of present accepted routine tasks.

Most successful research laboratories devote much of their time to the potentialities ahead. They help establish trends. They are looked upon as the planners and originators for what is to come.

One of the top questions in the minds of persons interested in materials handling research has to do with the scope or functions of a well organized staff unit of this kind. The research group with which I am associated covers the fields of materials handling, packaging, packing, loading and storage and warehousing. This is the cycle of handling.

The Planning Phase

The essential factors in the planning phase might be classified as: 1. plan; 2. organize; 3. train; 4. maintain interest.

In the planning or initiation of a new materials handling program, a staff department—research or similar level—usually originates the plan. It is then approved by the executive department and divisional staff. As soon as it is passed to works managers through proper channels, the advisory function is performed by manufacturing research staff.

A plan of this kind includes all phases of handling to give a plant operation the benefit of the most progressive industry systems. It is reviewed annually and supplemented or changed as necessary. Sufficient flexibility is provided to be adaptable to various kinds of industrial establishments. Plans of this type have general industry application today and have done much to place materials handling on a high level.

The second factor—to organize—refers to the selection of highly qualified personnel to place the proper emphasis on the entire program. The materials handling engineer should be considered on a staff level. He should select his staff from the best men available. In many plants today, it is expedient to include in the functions of the engineer other duties closely related, including packaging, loading, storage and warehousing.

There are two general sources to draw from—the practical factory trained man, and the engineering graduate with a college degree. Both are required in a well balanced materials handling organization.

Next is the training factor and it relates to guidance courses for supervisory as well as non-supervisory materials handling people. The cooperation of training directors will be a big help in the development of training courses and in carrying them out. Company sponsored meetings and conferences of materials handling engineers and others vitally interested have a training impact if properly planned, and are doing much good in promoting the general subject.

Training reaches right down to the men doing the plant handling, including lift truck operators and warehouse men.

After the planning, organizing and training factors have been worked out, one of the big problems is to continue to maintain constant interest in the materials handling program. This is a function of the centralized staff organization authorized to guide the entire program.

Because of the large amounts of money spent today for materials handling, top management thinking is an important factor in keeping interest alive. I recall several letters to staff personnel from executive officers emphasizing the importance of maintaining established cost objectives in this program.

The works manager is more concerned than anyone else as to the interest of his organization in carrying out plans for approved materials handling programs. He considers the engineer the key man to maintain enthusiasm and make substantial progress in his plant for improved materials handling.

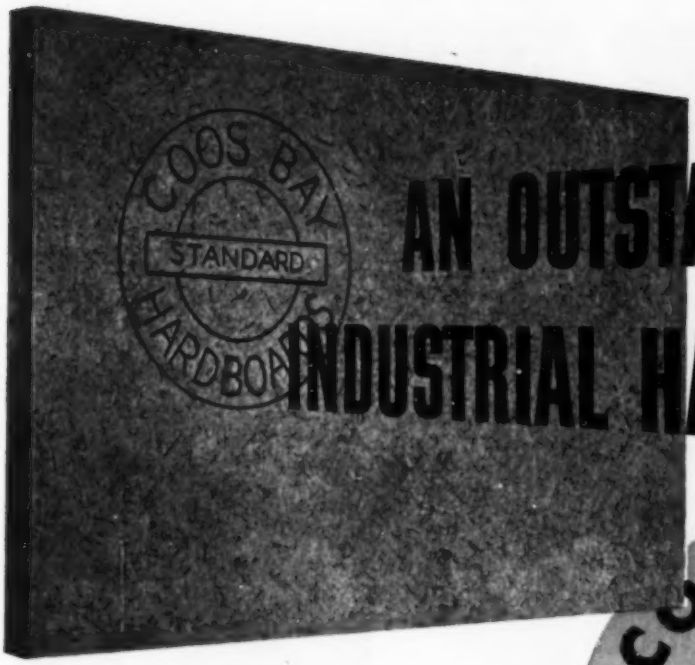
There should be a lot of original thinking injected into the program. The ideas thus developed and proving worth while are made available through data sheets or letters to all operations affected. Similarly, new methods developed at plant level are given general distribution.

Efficient Building Designs

It is the duty of those having staff assignments to review frequently the methods by which interest for materials handling is kept active. The best system in the world can gradually become non-effective if the planning does not include also a method of selling it effectively and keeping it growing.

Industrial engineering departments realize the high percent of the total product cost represented by handling

Continued on Page 60



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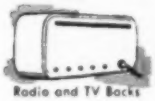
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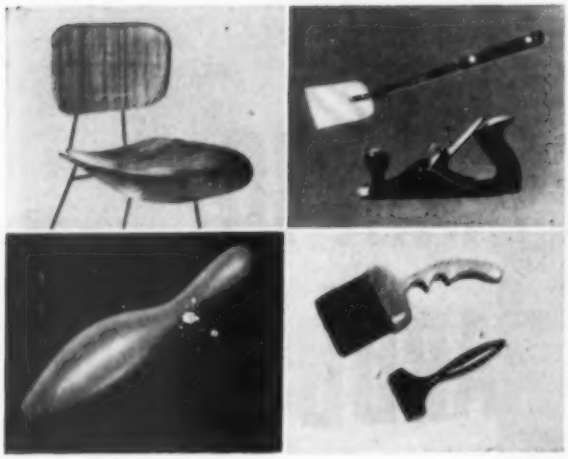


LEFT —Some of products that can be shaped from Castwood

RIGHT— William Fuqua molding door lite from Castwood. C. C. Heritage (left), Weyerhaeuser's development director, and William Marr, Forestrong development engineer, look on

HANDFUL of Forestrong's whole wood casting fiber

New Man-Made Wood Opens Door for "Cast" Products

Intricate Shapes Produced Quickly and at Lower Cost With "Reconstituted Wood" Process of Forestrong Co.

THE BEGINNING of a new basic industry, founded on the principle of literally taking a tree apart and putting it together again—improving on nature in the process—was demonstrated publicly for the first time in December by Forestrong Co. of Los Angeles and Weyerhaeuser Timber Co., one of the nation's major producers of forest products.

Products from what is termed "reconstituted wood" or "Castwood" are expected to change manufacturing processes and design in hundreds of conversion industries, and revolutionize thousands of consumer products in many fields. The reconstituted wood can be formed into intricately contoured shapes of extraordinary strength and physical properties.

Representatives of more than 130 different conversion industries who have been given confidential previews of the development are already planning applications. The field of application is practically limitless.

Television cabinets and similar containers can be "cast", finished and assembled at a saving of 20 to 25%. Tool handles of hard Castwood that fit the hand can be made for less than conventionally fabricated hardwood.

Folding chairs with form fitting seats and backs, and many other articles of furniture are fabricated economically with reconstituted wood.

At the demonstration, held for the press only, at the Forestrong laboratory and pilot plant, 1355 West 190th Street, Los Angeles, a thousand pound aerial bomb, protected with an easily applied Castwood guard was dropped on a concrete slab with a striking force of 87,700 pounds and emerged undamaged. This was to demonstrate safe handling of loaded bombed under field delivery conditions.

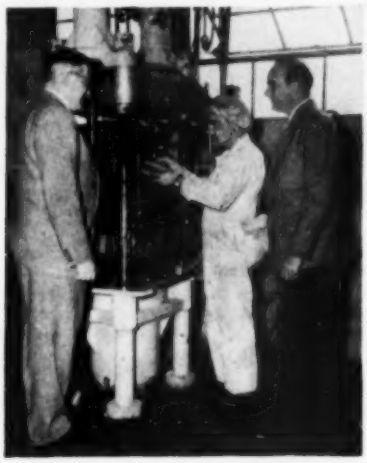
The process of taking the tree apart and turning it into resinated whole wood fibers, then reconstituting the wood into useful shapes, was explained in a pre-demonstration briefing by Walter Burroughs, president of Forestrong Co., and C. C. Heritage, Director of Development for Weyerhaeuser Timber Co.

Castwood is the culmination of 15 years research by the Weyerhaeuser Co. Forestrong Co. developed the methods of reconstituting the fiber into industrially usable shapes.

On display for the briefing and demonstration were products such as, TV cabinets, tool handles, printing plate blocks, ladies platform shoe soles, window frames, cabinets, contoured shoe last blocks, croquet balls, bowling pins, mallets, textile picker sticks, salt water sinking ammunition packaging.

Forest Policies Booklet

Forest policies, which the major wood using industries believe will keep this nation's timberlands productive, are defined in "Growing Trees in a Free Country," available from American Forest Products Industries, 1816 N St., N. W., Washington 6, D. C. The policies, drawn up by a Forest Industries Council representing the NLMA, APPA and APA, include industry programs of tree farming, woodland management, fire protection, etc.



DISH made from Castwood being examined by Robert Silverstein, Eldon Mfg. Co. president, Max Factor, Jr., Max Factor Co. president, and C. C. Heritage

THIS IS A CUBE OF

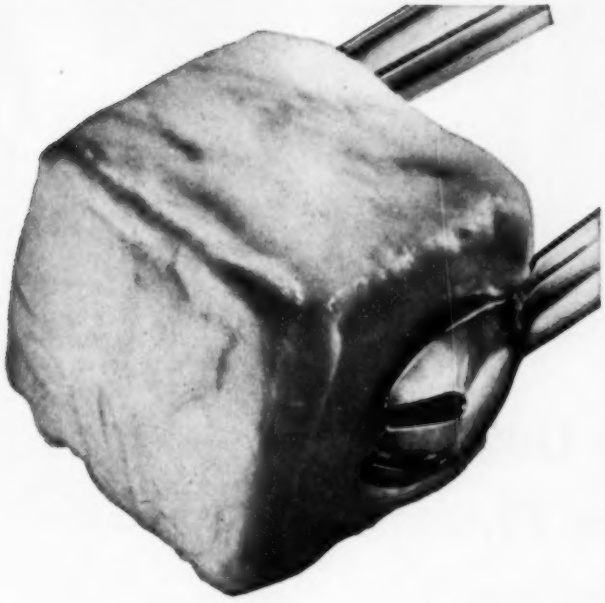


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FIG. 1—Cedar lined wardrobe trunk. Right half has cedar lined drawers and main body is also red cedar plywood

FIG. 2—Set of modern hand baggage in attractive patterns of gray textile coverings and sewed leather corners

How Modern Luggage Is Made From Plywood

Methods Described Include Bending, Scarfing, Assembling, Reinforcing, Binding and Covering Plywood

By THOMAS D. PERRY

FEW TRAVELERS realize that plywood is the base from which most high grade luggage is made. The plywood may be concealed by leather or fabric coverings, as well as by decorative linings, but the luggage derives its amazingly light weight and sturdy qualities from the remarkable strength-weight factors of modern plywood.

The present hand luggage factory is a lineal descendant of the trunk factory of olden times. At the present time, trunks constitute only about 10%, dollar wise, of the output from these factories. The present day trunk is usually a wardrobe trunk, employed fully as much for storage as for travel, and is a far cry from its earlier counterpart, which had layer on layer of horizontal trays, hat boxes, etc. including a capacious bottom for larger garments.

Where one hand bag used to be considered adequate for a few days trip, with reserve supplies in a trunk in the baggage car, the present vogue is a matched set of bags of several sizes, with enough capacity for a month's vacation trip.

The base of all the items in the set is light weight, sturdy plywood, glued and stapled together before covering. The sewed leather corners project enough to protect the fabric coverings from scuffing, whether set flat or edgewise. The back is usually provided with four large headed (¾ in. to 1 in. diameter) tacks, to permit sliding along the station platform without damaging the leather corners.

It may be interesting to follow the various stages through which modern plywood becomes the major strength factor in building this decorative hand baggage.

Plywood for baggage must be light weight and as thin as the size of the case will permit. Standard thicknesses are 3/32 in., 1/8 in. and 5/32 in., and sometimes 3/16 in. for larger cases. Basswood plywood has been largely used, but is not quite as strong as some of the denser species. Cottonwood and yellow poplar are widely used with some soft birch. The birch of the Baltic countries appears to be lighter than domestic birch and is admirably adapted to baggage uses, but the complications of importation and the European custom of making random sizes is likely to offset the lower costs of these foreign plywoods.

Baggage plywood is usually hot pressed with resin adhesives for greater durability and smoother surfaces. This baggage plywood must be relatively free of defects that would prevent bending the round corners or which might be apparent through the coverings. Urea resins adhesives are the rule, although in the thinner plywood, film glues are often used.

The plywood is first dimensioned into long sides, or rims, and rectangular tops and bottoms with rounded corners. The sides are an inch or more longer than the periphery of the case, to allow for the scarf joint that splices together the two ends. The ends of these long sides are tapered to a scarf, which is ten to 12 times as long as the thickness of the plywood.

The bending of these sides is done in a bending press such as is illustrated in Fig. 3. The cylinder or drum, around which the plywood is curved, is adjustable or interchangeable for various diameters, depending

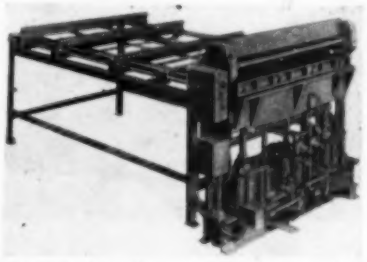

FIG. 3—Bending press with heated cylinders

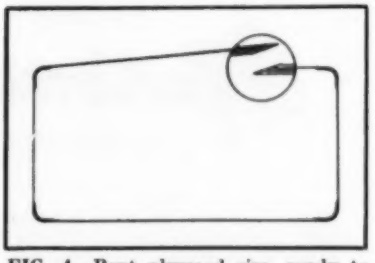

FIG. 4—Bent plywood rim, ready to close the scarfed joint

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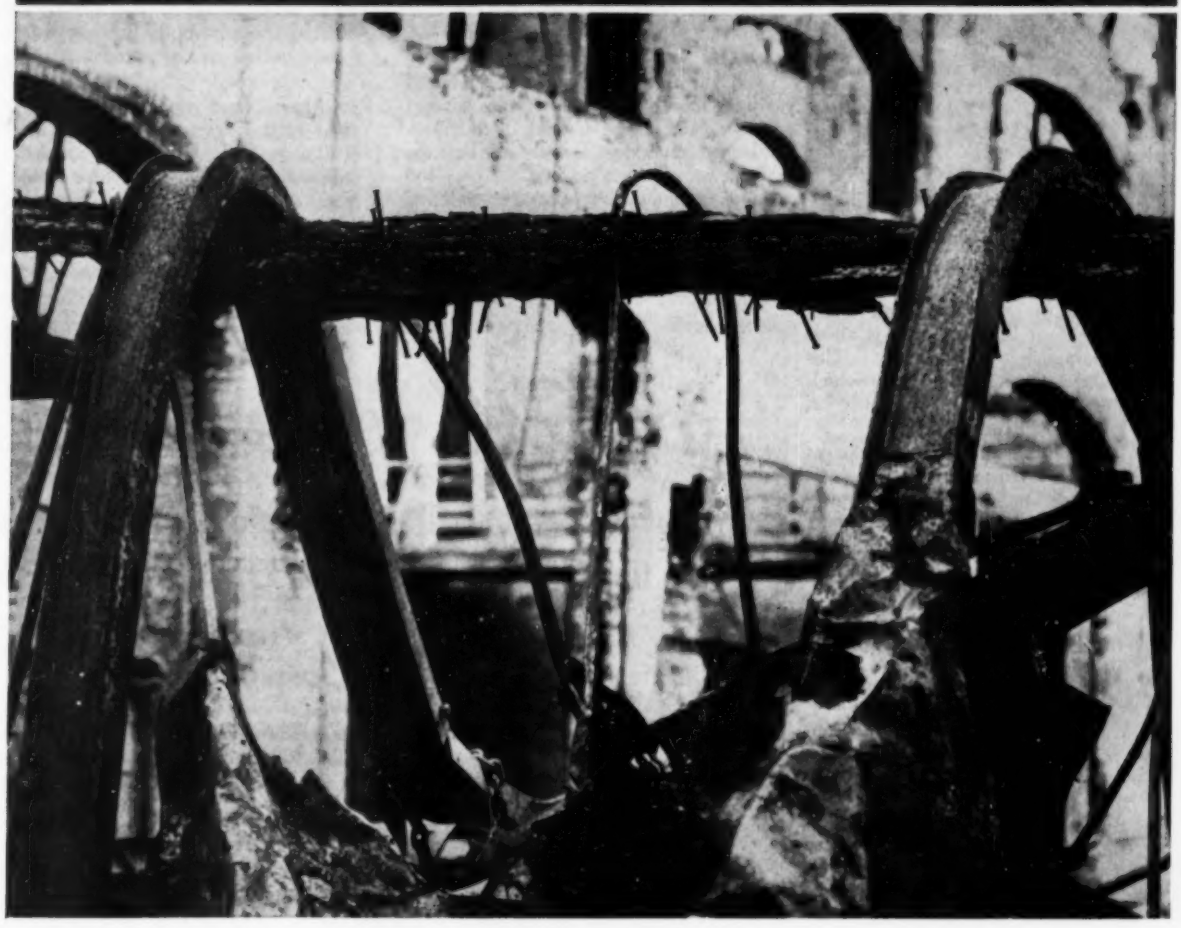

Fire-resistance—wood vs. steel

Because of combustible powders, the fire in this casein plant at Frankfort, N.Y., was short and hot. Steel roof trusses quickly collapsed. Result—a total loss. But note how this heavy *wood* member, a 12″x16″ nailed, laminated beam, stood up after hours of burning and supported the twisted steel girders.

This beam was installed before the development of today's specialized timber-fabricating plants. A modern glue-laminated member treated or coated with a fire-resistant material would have showed far greater durability. Wood doesn't collapse. It holds until the cross-section is actually reduced to a breaking point by steady flame. It allows *time*—very often time enough to save the structure. That's why heavy, mill-type wood framing earns low insurance rates.

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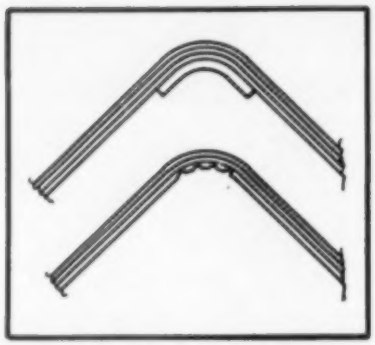

FIG. 5—Types of corner bends

on the radius of the desired bend, which in most luggage cases is about 1½ in., requiring a 3 in. drum. This drum has interal heating units which maintain the drum temperature at 200° to 300° F, as required.

The bending machine in use at the Amelia Earhart factory is about 60 in. wide and will simultaneously bend six rims 8 in. wide, or as many of any size as will come within the 60 in. width. Before feeding into the bending machine, a pre-glued reinforcing strip is lightly tacked at four places on the inside of each rim. These reinforcing strips may be of thin plywood, hard fibre board or heavy kraft paper.

When the half dozen sides or rims are placed in the bending machine, they are jogged against a back gauge, so that all the bends will come at exactly the right place. It takes two or three minutes for the throat to come up against the plywood, wrap the quadrant of the curve around the lower side of the drum, and complete the cure of the resin adhesive under the reinforcing strip. This strip firmly reinforces the bend at just 90° and holds it there.

As soon as this first corner is released, the back gauge automatically moves all the strips forward the distance required for the next bend, and the process is continued until all four corners are completed. The rim is now a rectangle with four rounded corners, with overlapped tapering ends as provided for the scarfed joint, and as shown in Fig. 4.

FIG. 6—Electrically heated scarfing press

There is an alternate type of bending technique, suitable for smaller cases, where the heated cylinder, or drum, has ridges on its under side which are impressed into the plywood and facilitate the bend by crushing the wood fibres on the concave side which are in compression.

This corner, when made without reinforcing strips, must be curved beyond 90°, as it may tend to open up slightly after cooling. Plywood up to 3/16 in. thick can be bent by either process without fracturing the wood or opening up the resin glue joint in the plywood. Both types of corner curves are illustrated in Fig. 5.

Either a urea resin adhesive is applied to the scarfed ends or a sheet of film glue inserted, and a couple of wire staples used to prevent the scarf from slipping apart under pressure. The scarfing press is shown in Fig. 6, using pneumatic pressure at around 100 lbs. p.s.i., and equipped with resistance heating units in the pla-

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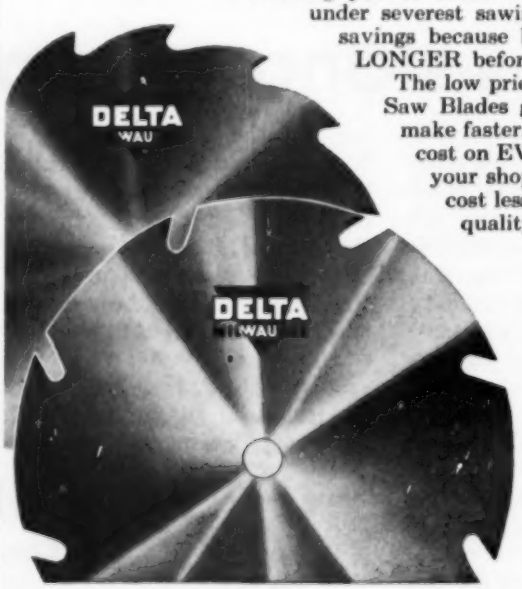

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tens, which will produce bonding temperatures of 250° to 300° F.

The rim, or sides, now a closed rectangle, is placed on the table of a wire stapling machine having a back guide very close to the stapling mechanism, so that staples can be driven through the edges of the top or bottom and into the thin sides. An adhesive is applied to the uppermost edges, usually a polyvinyl resin adhesive, and the top firmly stapled all around. The partly finished case is turned over and the bottom similarly attached. The closed case is run across a belt sander to remove all projections.

There is an alternate method of joining the top and bottom to the sides, eliminating the staples, and using a urea resin adhesive, which is cured in the hot press shown in Fig. 7. The pressures required, which are pneumatic, are very slight, to avoid crushing the thin sides.

We now have a completely enclosed case, glued and/or stapled. This is sawn apart, into a deep bottom and shallow lid, on a special circular saw mounted on a vertical shaft. The table of this saw is adjustable for different depths of tops, and the enclosed case pushed around so that the saw cuts the entire periphery. We now have a separate top and bottom to each case, which are marked and kept in matching pairs.

The joint between the top or bottom and the sides needs strengthening and a sturdy cloth strip, about 1 in. wide, is glued in each corner, from curve to curve, as is shown in the left sketch of Fig. 8. These cloth strips will later hold the stitches employed to attach the outside leather corner strips, as they are sewed in place.

The reinforced plywood case, in two pieces, now requires stronger meeting edges to take the hardware, and to nest the top over an inner lip projecting upward from the bottom. A cross section of the reinforcing of these edges is shown in the right sketch of Fig. 8. The reinforcing strips are narrow pieces of plywood,

FIG. 7—Hot press for assembling tops and bottoms on sides

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Because of a lively and continued reader interest in Mr. Perry's series of 14 articles (concluded in the December issue) covering a wide range of questions and answers about gluing, WOOD & WOOD PRODUCTS will shortly reprint them all in convenient handbook form.

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glued and stapled in place. These plywood strips can be easily bent around the inside corners. Polyvinyl resin adhesives are used here because of their quick tack.

A newer type of bending press, recently developed and shown in Fig. 9, provides for making two simultaneous bends. This cuts in half the bending time on a single unit, and provides such accuracy that tops and bottoms can be made interchangeable. The plywood, with two bends, as illustrated, is one half of a case, and requires two scarfed joints which can be accurately located for gluing in an appropriate type of jig.

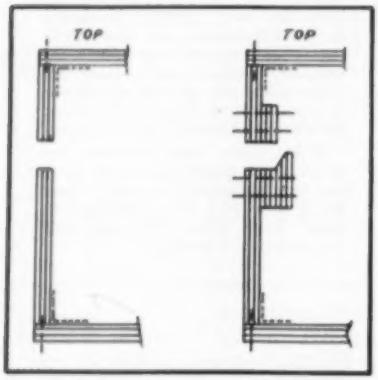


FIG. 8—Reinforcing split case with cloth strips (left) and plywood strips (right)

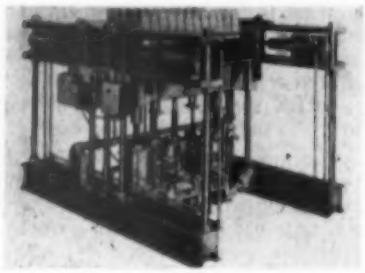


FIG. 9—Double bending press cuts bending time in half

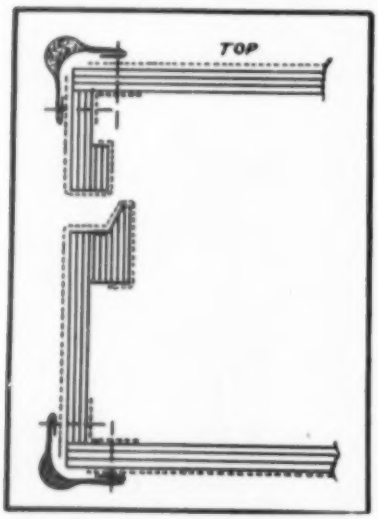


FIG. 10—Covering and binding the plywood case

The top and bottom halves of the case are now complete, so far as the plywood construction is concerned, and are ready for covering. They are extraordinarily rigid and very light in weight.

Case coverings are infinite in variety, as to texture, color and decorative figure, and the method of attaching the covering may differ between the various materials.

However, a standard method will be described which may be modified in other cases. A cross section of the several stages in covering is shown in Fig. 10. The top and bottom coverings, inside and outside, are flat and glued down, but do not quite extend to the corners. The inner coverings are usually put in after the leather corners are sewed in place, but the outer coverings come before the leather work.

The covering is glued on the rim, extending almost to the corners on the outside, over the reinforced edges and down a short distance on the inside. In deep cases the inner lining may be put on in separate pieces. The outer covering of the rims is in one piece, neatly trimmed to a butt joint on the back of the case.

The leather corners are stitched in place in a most ingenious sewing machine, and the stitches go not only through the plywood, but also through the inner reinforcing strip of cloth, shown in the left sketch of Fig. 8. The stitching is also on the top and bottom side of the case, usually a double row of stitching in each location. The leather is padded at the corner to protect the coverings from scuffing and damage.

The linings may be flat interior coverings, glued flat to the plywood, but for the more costly cases they are likely to be quite elaborate and attractive, with silks and satins.

The hardware is especially designed for each type of case, and adds an interesting element of trim. Holes are punched on jigs for hardware locations. All hardware is anchored in place on automatic riveting machines.

The item of luggage is now complete, ready for wrapping. It is of minimum weight and maximum strength, and may be as gay or as sombre as the buyer wishes. A wide assortment is always available for all tastes.

This extreme lightness makes this plywood luggage unusually desirable for airplane travel by both men and women, since weight is an important factor in travel costs. Many men still prefer the heavier all-leather bags, where steel is used for corner reinforcement and for the attachment of hardware.

It should not be concluded that all luggage is made of plywood. The processes described are not the cheapest, but all in all, they provide the more desirable types of travel accessories. Various types of fibre board are often used, but they are heavier and not as stiff and rigid as plywood.

Plywood is the ideal material for high quality travel equipment and no other material can offer equal weight-strength-rigidity advantages. It is easy to fabricate, and is the accepted material for the best types of luggage. As such it is accepted by all leading manufacturers, and discriminating purchasers will insist on plywood luggage. This is but another instance of the remarkable versatility of modern plywood.

Note: *The author is indebted to "Amelia Earhart Luggage" for a courtesy inspection trip through their modern factory at Newark, New Jersey; and to the Handy Mfg. Co., Chicago, for photographs of equipment.*

Materials Handling Meeting

Purdue University will hold its fourth Materials Handling conference Feb. 17-18, with the Indianapolis chapter of the American Materials Handling Society as co-sponsor. George Smith, of International Business Machines Corp., Endicott, N. Y., national president of the Society, will be the keynote speaker.

Other topics to be discussed: "Mechanization and Human Relations," Handling Waste Materials," "Effective Utilization of Industrial Trucks," "Work Sampling," "Some Concepts of Storage Space Layout and Stock Location."

The planning committee includes: Virgil H. Allen, Eli Lilly & Co., Indianapolis; D. C. Rhodes, Pitman-Moore Co.; Griffith Williams, Jr., Bridgport Brass; Harold L. Bock, R.C.A.-Victor Division; and W. W. Phillips, Eli Lilly. Prof. Harold T. Amrine of the industrial engineering section at Purdue is general chairman.

So. Hardwood Containers

"Industrial Packaging With Southern Hardwoods" is the title of a new 8-page booklet now available from the Southern Hardwood Producers, Inc., 805 Sterick Bldg., Memphis 3, Tenn. Outlined are the container characteristics of the more important southern hardwoods such as cottonwood, willow, the gums, soft elm, oak and others.

they like the MATTISON MOULDER at Tomlinson . . . . .

Since 1900 Furniture by Tomlinson has been a quality name from coast to coast. The finest equipment for all phases of production are a *must* . . . naturally they like the Mattison Moulder at Tomlinson.

The Tomlinson operator likes it because it is as easy to set-up, feeds so easy and produces so few rejects . . .

The Tomlinson foreman likes it because he gets production when he wants it and as he wants it—*good* . . .

The Tomlinson superintendent likes it because it produces high quality quickly and easily and his production schedules are consistently met . . .

The Tomlinson cost department likes it because it produces high quality work at low cost . . .

The Tomlinson management likes it because work comes through uniformly accurate, and proper fitting —a necessity in producing high quality bedroom, living room and dining room furniture by Tomlinson.

Yes – makers of Furniture by Tomlinson like the Mattison Moulder — and *you* will like it, too!

MATTISON MACHINE WORKS

ROCKFORD · ILLINOIS

Maybe These Are the Reasons Furniture Makers Swear by Bradley!

Anyway, we're showing you this picture to let you see the size and calibre of the plant behind Bradley service. Here are facilities comprising the newest in machines and drying equipment, manned by craftsmen skilled in wood parts production; here are standards keyed to the best for today, but seeking better for tomorrow; here, in short, are plant, practice and purpose which retain the confidence and customers of America's leading users of . . .

HARDWOOD
FURNITURE
DIMENSION

★ ★ ★

Supplied in accurate conformity with your order:

CUT TO SIZE
SOLID AND GLUED
RUN TO DETAIL

★ ★ ★

ALL SOUTHERN SPECIES

On what shall we quote?

BRADLEY
LUMBER COMPANY of Arkansas • WARREN ARKANSAS
BRAND BRADLEY

PATENT DIGEST

Barrel Manufacture

A. C. Merron. U.S. 2,649,124, Aug. 18. Assembling a plurality of straight wooden strips coated with adhesive, curving both longitudinally and transversely by pressure applied normal to the surfaces and laterally at the lines where the assembly tends to spread and maintaining such pressures until the adhesive sets.

Finishing

L. H. Jones (to E. L. Bruce Co.). U.S. 2,649,755, Aug. 25. In an apparatus for finishing flooring, a conveyor for flooring units, a framework mounted over the conveyor supporting three rollers rotatably mounted in parallel, driving means, a trough partially surrounding the first roller containing a coating, a scraper before the second roller to regulate coating thickness, and the third roller serving to remove excess coating.

Patches

E. V. Bennett and H. Renn (to M and M Wood Working Co.). U.S. 2,649,869, Aug. 25. Veneer patch cutting machine including a table for supporting a strip of wood veneer, a V-shaped cutting tool for cutting a groove in the strip, a slide carrying the tool across the strip, a slide guide, means for reciprocating the slide, and adjustment means.

Planer

J. J. Miller (to Phillip A Sussman and E. H. Jacobs). U.S. 2,649,872, Aug. 25. Planer attachment for rotary saws.

Press

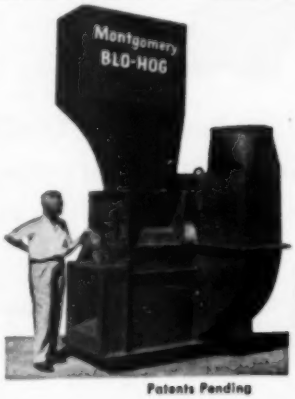
W. E. Jones and G. A. Neilsen (to Jones Steel Products, Inc.). U.S. 2,648,361, Aug. 11. A joining press for boards aligned endwise in initially spaced relation and formed at adjacent ends for finger jointing, the press comprising a table, a longitudinal hopper assembly above the table for a plurality of boards, the hopper being arranged to feed the boards in aligned relation, glue applying means, and pressing means.

Hinge

D. R. Wilhelmi. U.S. 2,648,870, Aug. 18. An offset hinge construction for laminated plywood doors.

Pulpwood Product

C. U. Gramelpacher. U.S. 2,649,034, Aug. 18. Producing a rigid grained artificial wood veneer sheet by mixing wood particles and wood pulp in a liquid, floating onto a moving carrier in such a way as to cause parallel orientation of fibers, drying applying a bonding agent, pressing, and setting the bonding agent.



Patents Pending

The Marvelous Montgomery

BLO-HOG

(The only all-purpose hog in the world)

Eats Up Everything!

. . . including Pine, Oak, Gum, Hickory, Elm, Wet Veneer, Round-up and Sandy Bark. Conveyor-fed — no attendant required. Positively protected from major damage by tramp steel. All connections locked — nothing to shake loose. Maintenance costs unbelievably low.

". . . Dear Mr. Montgomery: It is an unbelievable machine and it is still hard to believe that it is actually handling the enormous volume of scrap we are feeding into it. We operate the hog without an attendant—which means a considerable saving.—J. B. Black, Plant Superintendent, Ocala Manufacturing, Ice and Packing Co., Ocala, Fla."

C. I. T. Terms Available

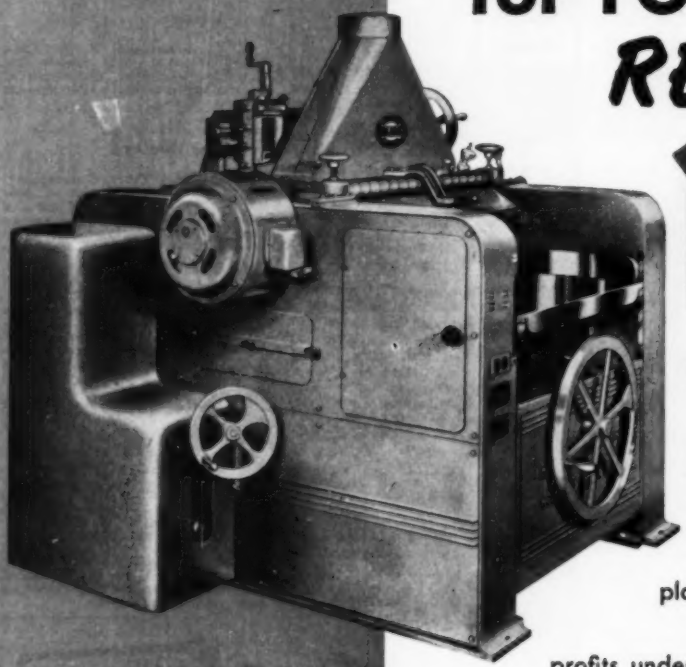
Write for bulletin and details

JACKSONVILLE BLOW PIPE CO.

P. O. Box 3687
Jacksonville, Florida

for PLANNED Price Advantage for YOUR PRODUCT

REPLACE with BUSS CABINET SURFACERS



BUSS MODEL 4-L

Buss Model 4L, 24" to 30" x 8" Single Surface Cabinet Planer. The line contains single and double surface types to suit every production set-up, including the surfacing of rough lumber.

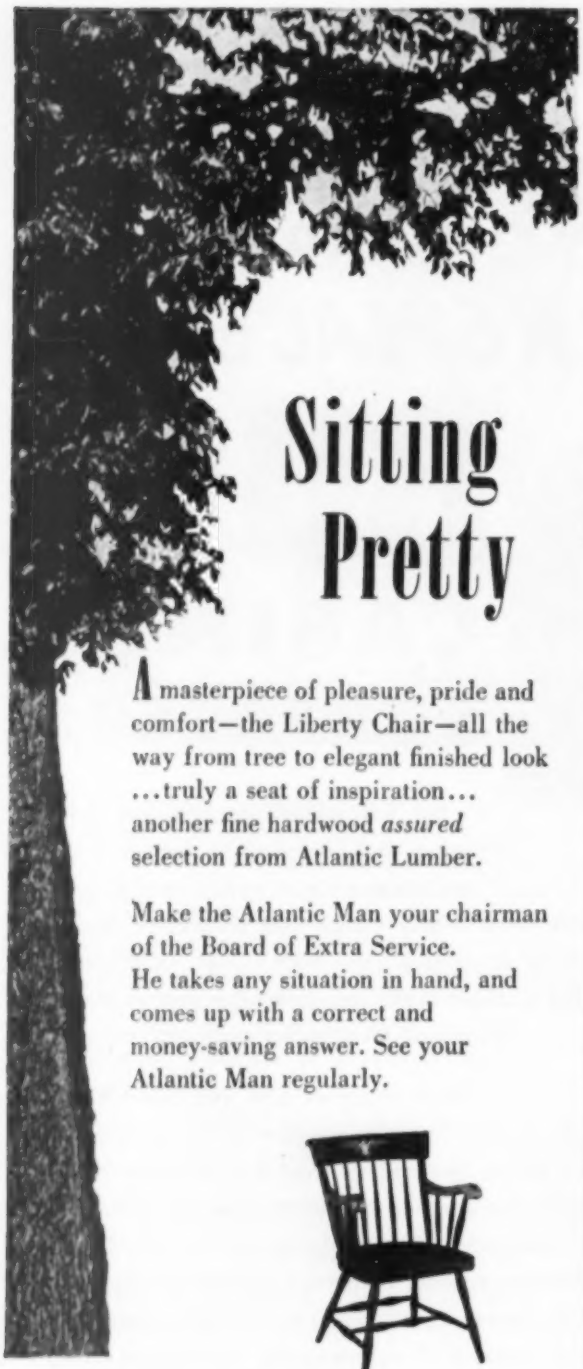
For far-sighted management that is planning and retooling to assure a price advantage for its products and normal profits under highly competitive conditions, replacement of older planers with modern-to-the-minute BUSS Cabinet Surfacers constitutes one of the best equipment investments that can be made.

These machines give you finest finished planing at three to four times the speed of older machines . . . cut set-up and change-over time as much as 60% . . . provide for grinding and jointing knives with perfect accuracy in just a fraction of the time formerly required, and incorporate numerous exclusive features that guarantee years of continuous, uninterrupted service with almost negligible amount of maintenance. Consult us on your planing requirements. There's a BUSS Cabinet Surfacer to exactly fit your production set-up. Write for descriptive bulletins.

PRECISION BUSS PLANERS

BUSS
SINCE 1862
MACHINE WORKS

PLANER SPECIALISTS EXCLUSIVELY



Sitting Pretty

A masterpiece of pleasure, pride and comfort—the Liberty Chair—all the way from tree to elegant finished look ...truly a seat of inspiration... another fine hardwood *assured* selection from Atlantic Lumber.

Make the Atlantic Man your chairman of the Board of Extra Service. He takes any situation in hand, and comes up with a correct and money-saving answer. See your Atlantic Man regularly.

THE ATLANTIC LUMBER CO.

88 BROAD STREET, BOSTON 4, MASS.
1055 SENECA ST., BUFFALO 10, N. Y.

Saw Blade

A. E. Lundberg. U. S. 2,644,494, July 7. Saw blade with set teeth, each having a cutting edge formed by the intersection of the breast and back surfaces of the tooth, said back surface of each tooth being inclined downwardly in the direction of the set at an acute angle relative to the perpendicular to the plane of the saw blade, consecutive teeth being oppositely set.

Jointer

J. J. Konopa. Aug. 25. Device for adapting an electric drill as a component of a portable jointer comprising an elongated base having forward and rear sections, said rear section having a vertical flange, a pair of vertical legs, and a flat bottom with a recess in which a cutter is supported.

Lumber Trimming

C. A. Sherman (to Weyerhaeuser Timber Co.). U.S. 2,649,875, Aug. 25. Lumber trimming and marking machine containing an elongated hold-down shoe having a channel shaped cross-section, a flat work engaging bottom wall on said shoe having a pair of longitudinal slots and auxiliary shoes mounted thereon and having work engaging surfaces.

Joint Connector

A. L. Johnson U. S. 2,654,923, Oct. 13. A split distortable band for insertion in a recess in a member of a wood joint in combination with a screw which passes through both joint members and into said band.

Gluing

W. S. Thompson and H. Renn (to M and M Woodworking Co.). U.S. 2,649,876, Aug. 25. High frequency glue curing press comprising a skeleton pressure member of dielectric material having a pressure face for pressing a joint to be glued and electrodes adjacent said face for establishing dielectric currents through the glue line.

Log Turner

D. C. Richardson. U. S. 2,655,185-6, Oct. 13. Log turner for sawmills including fluid-actuated means for rotating a log against cutting knives.

Tubular Bodies

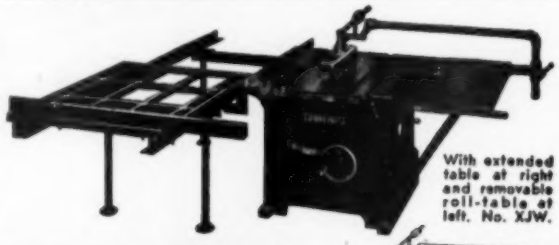
H. N. Moe (to I/S Interply). U. S. 2,655,187, Oct. 13. A machine for producing tubular wooden bodies from coiled veneer sheets.

Wood Treating

E. Farber and M. Sciascia (to Timber Engineering Co.). U. S. 2,655,454, Oct. 13. Wood impregnating and dehydrating composition containing tars, creosotes, a water-soluble polyhydric alcohol and solutions of alkali metal borates, boric acid, or boric acid esters.

Panels

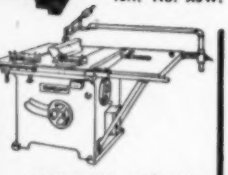
H. W. Collins (to Tectum Corp.) U. S. 2,655,458, Oct. 13. Forming a layer of wood wool impregnated with aqueous magnesium oxide and magnesium salts, continuously passing the layer through a current of heated air, and then passing between compressing surfaces.



With extended table at right and removable roll-table at left. No. XJW.

Tannewitz "XJ"

FINEST THING IN MITRE SAWS!

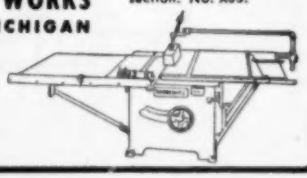


Sliding left section top and extended table at right. No. XJSW.

Choice of 5 different tables enables you to obtain a mitre saw that matches EXACTLY your production requirements. Does away with awkward working conditions, steps up production, and saves time and money. Nothing like it. Moderately priced. Write for Bulletin XJ.

Standard solid table, (No. XJ) or sliding left section. No. XJS.

THE TANNEWITZ WORKS
GRAND RAPIDS, MICHIGAN



Extended table at right—extended sliding table at left. No. XJSW—J-430.

"They always stay true-to-pattern, too!"

Talk to any user of Jones & Orth Cutter Heads and you'll hear *plenty* of good reasons why they're enthusiastic about them.

Those who keep the closest check on *both* quality and costs are always our strongest boosters. And—the tougher the job to do, the more likely it is that you'll find Jones & Orth Heads being used!

If YOU want cutter heads that will do a consistently better job—turn out higher quality work, at LOWER net cost—your best bet is unquestionably Jones & Orth.

The way to prove this to your own satisfaction is to install a set of our cutter heads on your hardest working unit, then compare output—and costs!

Write today for new catalog, and name of our dealer nearest you. Address either our Seattle or Memphis branch.

Need specially designed cutter heads? Let our engineers help! Write us in detail. Prompt service!

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385 SOUTH MAIN STREET
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You Should Have the Advantages of N. H. L. A. *Membership*

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This valued service—at preferred rates to members—is only one of the many advantages of membership available to reputable firms at less than actual cost. We will be glad to send you full particulars without obligation. Fill out the coupon below and send it today.

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NATIONAL HARDWOOD LUMBER ASSOCIATION

59 E. Van Buren St., Chicago

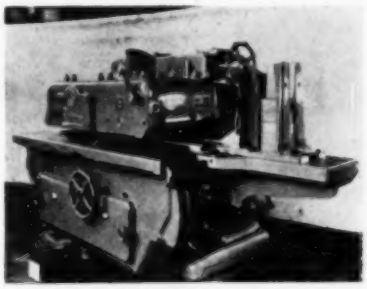
NEW and IMPROVED PRODUCTS

Double Cut-Off Saw

A No. 600 double cut-off saw, more compact and with all the essential features of larger machines, is now available from Mereen-Johnson Machine Co., Dept. WP, Minneapolis 12, Minn. It is available with trims only, or with tilting cope motors, stationary dado arbor and special attachments as optional equipment. The machine comes withall internal wiring and with magnetic starters for overload and low voltage protection. Motors are controlled from a central push button station and are interlocked so that all will cut out if one motor stops.

Dust Collecting Adhesive

A permanently tacky, solvent type adhesive, Resyn 35R2625, has been developed to collect and trap chips and dust created in assembling television and radio sets and other precision equipment cased in wood housings. A thin film is painted on inside areas to keep the set clean from particles which might penetrate operating parts. Available from National Adhesives Div. of National Starch Products, Inc., Dept. WP, 270 Madison Ave., New York 16, N. Y.



Precision Gang Rip Saw

The Raimann high capacity gang rip saw, a precision unit with or without hopper feed, is now available from E. V. Prentice Co., Dept. WP, 2303 N. Randolph St., Portland 12, Ore. The machine is capable of producing a glue joint surface. Other units include automatic, high capacity, single or double gang edging or ripping and grooving saws, vertical high speed 44x56 in. band resaws and automatic multiple cutoff saw with hopper feed.

New Industrial Adhesive

A new glue for woodworking use has been placed on the market by the Franklin Glue Co., Dept. WP, 119 W. Chestnut St., Columbus 15, O. It is said to combine the fast set of the polyvinyl acetate resin glues with the strength and durability of the high grade hide glues. Creamy in color, its working range is 50° F. to 110° F.

Twin Stair Router

Supreme Woodworking Machinery Co., Dept. WP, 50 Howard St., New York, N. Y., announces a new Twin Stair Router for the automatic production of matched and paired stair stringers. Featuring an easily adjusted, graduated template which guides the twin routers to the exact tread and rise desired, the machine eliminates the need for "marking off" and the use of pitch boards. Once the tem-

Want lower costs?
Want top quality?
Either way—IT'S CUT & DRIED!

BELCOBALSA CORE STOCK

Reduces costs because it's cut-to-size, Certified Kilndried, packaged, ready to glue—yet is priced lower than green core stock delivered in random lengths and widths!

Gives you flat, stable, lightweight panels, free of shadows—the best you can produce, regardless of cost!

CERTIFIED KILNDRIED
BELCOBALSA
REGISTERED TRADE MARK

Write for technical data and prices:

BALSA ECUADOR LUMBER CORPORATION
500 Fifth Avenue, New York 36, N. Y. Pennsylvania 6-0697

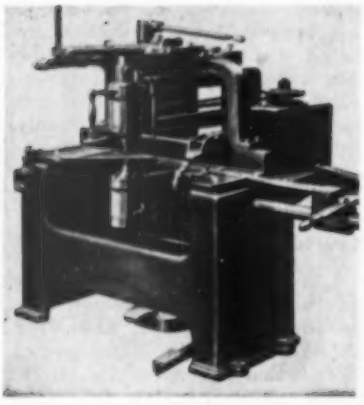
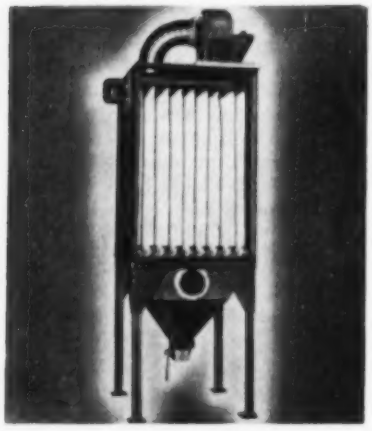


plate is set, no further adjustment is necessary to obtain stair stringers of perfect pitch. Another unique feature is the twin routers which cut two stringers simultaneously, assuring perfect matching.

New Type Dust Collector

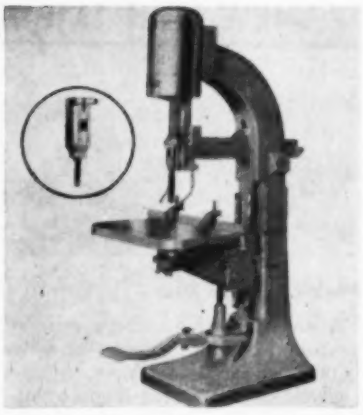
A new unit type CN cloth bag collector, designed for economical and efficient dust collection for smaller volume applications, is announced by Pangborn Corp., Dept. WP, Hagerstown, Md. Finely divided dusts such as fine wood particles are collected through cloth filter bags supported on a shaking mechanism that produces an action much like shaking a rug. The dust drops into the hopper below and cleaned air can be discharged inside the plant. Seven sizes of the collector range from 200 to 1000 square feet of cloth area.



Boring, Mortising Machine

An improved Model G250 Foot Feed Boring and Mortising Machine is announced by B. M. Root Co., Dept. WP, York, Pa. The improved model carries a 3 h.p. high and low speed motor with constant h.p. at either speed under full load, allowing high speed for rapid cutting of smaller and medium holes.

An adjustable pivot point in the feed mechanism provides increased leverage without added manual effort. Inset in photo shows mortising adapter for square holes.



Air Stapler

A Power-Line AS6 Air Stapler, for use in fastening operations in the woodworking and furniture industries is available from the Powers Wire Products Co., Dept. WP, Mon-

NEW! IMPROVED STIX

FOR CEMENTING

- CONSOWELD
- FORMICA
- RESILYTE
- FORMICA
- TEXTOLITE
- PANELYTE
- LAMINEER
- V-BOARD
- PARAPLEX
- PLASTILITE
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...THE ONLY CEMENT WITH THE LONGTIME SHELF LIFE GUARANTEE

NEW STIX Does Not Thicken With Age. STIX Needs No Clamps, Presses or Heat.

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To Get Finer Plywood, Specify . . .

Permawood
HARDWOOD PLYWOOD

Our 35 years successful experience, a top-grade management-skilled worker team, and use of the latest-type machinery and methods, has kept the quality of our product far above that of the average plywood. We offer it at competitive prices; and you're getting a finer value when you specify PERMAWOOD Hardwood Plywood.

A Hot-Plate Press in closed position. Skilled workmen exercise every care to insure that PERMAWOOD Hardwood Plywood is properly glued.

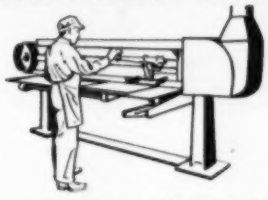
PERMAWOOD panels are made in Standard Sizes. Thicknesses in All Veneer construction from 3/20" to 1 1/16", and Lumber Core construction in 3/4" and 13/16". Widths from 30" to 48"; lengths from 36" to 96". Write for latest stock lists and prices.

DARLINGTON VENEER CO., INC.
Established in 1918
DARLINGTON, SOUTH CAROLINA

TEST PANEL sanded with *3M PRODUCTION PAPER* belt. After 6 hours' use, belt still CUT OFF all wood fibres. Only grain colors remain.

TEST PANEL sanded with *BRAND "X" PAPER* belt. Dulled after 6 hours, belt ironed down the fibres. Stain raised them, destroying grain colors.

Micro-photos* prove 3M Production Paper Belts best for stroke sanding!



Look at these pictures . . . they prove that *extra-sharp* 3M Production Paper belts do the best possible stroke sanding job.

In this shop test, two identical white-wood panels were sanded on the same machine by the same operator . . . on one panel a 3M Grit #5/0 Production Paper belt was used, on the other a Brand "X" Grit #5/0 Paper belt. After sanding, both panels *looked* the same . . . but after staining, the difference showed up. The panel sanded with Production Paper had *all the fibre fuzz cut off!* On the panel sanded with Brand "X" belt, the fibres merely had been ironed down flat—they rose after staining.

Here is proof positive that Production Paper belts are *sharpest* of all. They cut clean with less pressure. Too, they cut down the number of rejects resulting from inadequate white-wood sanding, and prevent cut-through of thin veneers—caused by heavy pressure necessary when dull belts are used.

Yes, for best white-wood sanding, always use Production Paper belts . . . be sure to specify 3M every time you order. For complete information, send for booklet, "3M System of Furniture Finishing," using coupon below.

**These photos show the surfaces of mahogany panels magnified 16 times.*

Remember, the final finish mirrors all previous operations.

3M® ABRASIVES

Made in U.S.A. by Minnesota Mining and Mfg. Co. General Offices: St. Paul 6, Minn. In Canada: London, Ont., Can. Export: 122 E. 42nd St., New York City. Makers of "Scotch" Pressure-Sensitive Tapes, "Scotch" Sound Recording Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-Slip Surfacing.

Minnesota Mining & Mfg. Co.
Dept. WP-24, St. Paul 6, Minn.

☐ Send me the booklet "3M System of Furniture Finishing"
☐ I'd like to talk to a 3M Salesman.

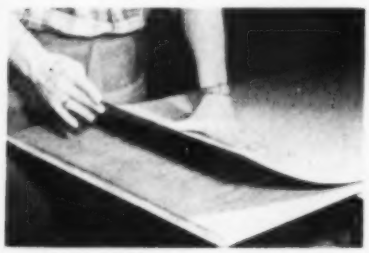
Name.....Title.....

Company.....

Address.....

City.....Zone....State.....

terey Park, Calif., or Monroe, Mich. The No. 6 Stapler shown is penetrating the clinching two pieces of wood ⅝ in. thick as effectively as two hand-driven nails. Operator in foreground is fastening tabs on a door frame, formerly a slow nailing job.



Adhesive for Laminates

A new improved adhesive for cementing plastic laminates to wood has been developed by Adhesive Products Corporation, Dept. WP, 1660 Boone Ave., New York 60, N. Y. Called No. 555 Stix, the new adhesive makes possible on-the-job installations without use of heat, pressure or clamps. It does not thicken or deteriorate during storage.

● The secret of the ability of CARBORUNDUM's Cabinet and Finishing Papers to sand flats and contours speedily and easily is in the backing. Specially treated, these backings are extremely tough and durable—yet their amazing flexibility prevents cracking and avoids wild scratches.

They give you the finish you want *every time* because they are absolutely uniform from lot to lot—thanks to new, scientific control in manufacture.

YOUR CARBORUNDUM DISTRIBUTOR or salesman will be glad to let you try them on your own finishing jobs. Call him today! Or write The Carborundum Company, Dept. WP 82-323, Niagara Falls, New York.

There is a product by CARBORUNDUM for every sanding and finishing job...

Belt Cloth and Paper • Vonnegut Polishing Head Abrasive Loadings • Moulding Cloth Drum Paper • Drum Combination . . . PLUS a complete line of Grinding Wheels and Sharpening Stones for your grinding department.

HAVE YOU TRIED NEW RED-I-CUT®-"L" WATERPROOF PAPER...the paper designed especially for sanding lacquers and synthetic finishes?

CARBORUNDUM

REGISTERED TRADE MARK

the ONLY source for EVERY abrasive product you need

82-323

NEW CATALOGS and LITERATURE

Moulder Bulletins

Two bulletins, describing a wide range of motor driven and belt driven moulders to fit the requirements of any woodworking plant, are available from S. A. Woods Machine Co., Dept. WP, 27 Damrell St., Boston 27, Mass. One bulletin describes the 133 and 134 series of "quick change" moulders, and another describes the 137M and 808M electric moulders in addition to the entire 133 and 134 series of motor and belt driven models. All machines are illustrated, and specifications and capacities are given.

Polyvinyl Resin Glues

A complete evaluation of National Adhesives' new and patented vinyl copolymer Wood-Lok 3026 is available in booklet form from National Adhesives, Dept. WP, 270 Madison Ave., New York 16, N. Y. Independent laboratory tests were conducted by the Wood Products Laboratory, N. Carolina State College, to determine the freeze-thaw stability and quality of Wood-Lok 3026, and results have been published in a booklet, "An Evaluation of Some Polyvinyl Resin Glues."

Abrasives Data Sheet

"Eight Ways to Cut Costs on Coated Abrasives" is the title of a data sheet published by the Behr-Manning Corp., Dept. WP, Troy, N. Y. Some of the rules offered by the company are: 1, watch inventories; 2, rotate stock; 3, check used coated adbrasives; and 4. control issuing of coated abrasives.

Wood Stabilizer Bulletin

A new 4-page bulletin which answers the 12 questions most frequently asked about Nelsonite wood stabilizer is available from Nelsonite Chemical Products, Inc., Dept. WP, 900 Monroe Ave., N.W., Grand Rapids 2, Mich. Also included is an explanation of the most popular Nel-

sonite products used for wood and wood products, as well as instructions for use—preparation, application and drying time.

New Carbide Catalog

A new 12-page tungsten carbide tipped saw and cutter catalog CT-100 is available from Huther Bros. Saw Mfg. Co., Dept. WP, 1290 University Ave., Rochester 7, N. Y. Described and pictured are many new items such as the #500 carbide tipped dado head, #142 carbide tipped saw grinder for sharpening carbide tipped saws, new design carbide tipped matcher cutters, cupboard door cutter sets, new #502 mitre joint cutter set and formed tooth special carbide tipped shaper cutters.

Plywood Catalog

Six new plywood products are catalogued in the 1954 Weldwood catalog, a 48-page guide to the plywood and allied products produced and distributed by U. S. Plywood Corp., Dept. WP, Weldwood Bldg., 55 W. 44th St., New York 36, N. Y.

The six newly catalogued products are Surfwood, decorative panel with texture of weathered driftwood; Checkerboard, hardwood veneers laminated on a plywood base; Novoply-core panels; Armorply Chalkboard, a metal-on-plywood material with a writing surface for chalk; and Honduras Mahogany Plankweld.

Band Mill Catalog

A new illustrated catalog describing in detail the improved McDonough 72 in. heavy duty band mill has been released by the McDonough Mfg. Co., Dept. WP, Eau Claire, Wis. This new double column 6 ft. band bill is designed for heavy duty sawing with a maximum capacity of a 60 in. diameter log.

New Glue Bulletin

A technical bulletin describing a new glue for woodworking, called Titebond, is available from the Franklin Glue Co., Dept. WP, 119 W. Chestnut St., Columbus 15, O. Physical properties, viscosity and all other pertinent data are described in this bulletin on a new industrial adhesive.

Hydraulic Presses Brochure

A new brochure on representative hydraulic presses and equipment manufactured by the R. D. Wood Co. is available by writing Dept. WP of the company, Public Ledger Bldg., Independence Square, Philadelphia 5. Printed in two colors and well illustrated, the brochure contains basic hydraulic press specifications in addition to representative high pressure hydraulic valves, hydraulic accumulators and hydraulic shock alleviators.

Grinding Equipment

A new, fully illustrated two-color bulletin (M-104) on precision grinding equipment is now available from Dept. WP, Redco Tool Division, Red Lion Cabinet Co., Red Lion, Pa. The bulletin gives complete specifications and price on the Redco precision grinder as a basic unit. Additional specifications and prices are included for the reciprocating carriage, router bit chuck, saw grinding attachment and head grinding attachment. Two pages are devoted to the Redco profile grinding attachment designed for original grinding and sharpening of high speed steel and cemented carbide profile cutters for shapers, moulders, tenoner heads and other tools.

Fan Engineering Data Book

Bulletin A-108, "Fan Engineering Data," is newly issued and available from the Hartzell Propeller Fan Co., Dept. WP, Piqua, O., manufacturers of industrial air-moving equipment. Included in the 16-page brochure are fan laws and formulae, terms and definitions, recommended velocities for exhaust hoods, an air pressure conversion table, and charts covering duct resistance, entrance losses and rectangular equivalents of round

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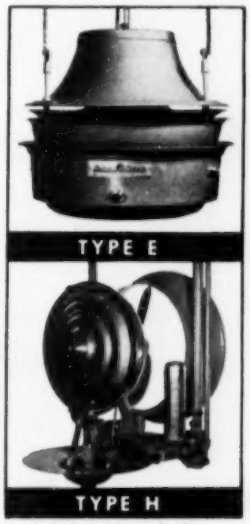

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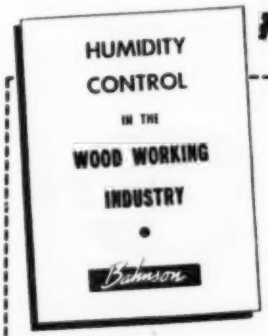

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FOREIGN WOODS

By George N. Lamb

MAHOGANY—*Swietenia spp.*

The origin of the name "Mahogany" is unknown. The most commonly accepted theory of its origin is that Mahogany is an Anglicized version of some native Caribbean name, although there is no evidence to support this view.

There is a much greater probability that the name "Mahogany" is of African origin, strange as that may seem. The English first came in contact with Mahogany trees in Jamaica after they took over that island from the Spanish in 1655. By that time the Spanish settlers had completely liquidated the native Indians on that island and had brought in many slaves from the West Coast of Africa. These slaves were in Jamaica when the English arrived.

It is a reasonable assumption that the English learned the names of the important local trees from this transplanted Negro population. In West Africa a tribal name, "M'oganwo", means "the great one of the forest" or "King of the forest". It is also reasonable to assume that when these natives were taken to Jamaica and found similar trees in the jungle, that they also were called "M'ganwo". It doesn't take any flight of imagination to believe that the English version of this strange word became "Mahogeney" in Ogilby's book in 1671.

The Mahogany tree and its wood became known to the Spanish explorers and settlers very soon after the West Indian islands were discovered. Columbus himself must have seen Mahogany trees in the forest that he described in a letter to Ferdinand and Isabella in 1492 as "and there were palm trees of six or eight kinds, wondrous to see for their wonderful variety, but so are the other trees". The Spanish found native canoes made of Mahogany and Cortez used this wood in building ships for further voyages of discovery. The earliest recorded use of Mahogany was in a house built in Santo Domingo between 1509 and 1515. Some of the wood from this house is still in existence. The Spanish name for Mahogany is Caoba.

Except for local tropical and infrequent haphazard imports, Mahogany was little known in the North American colonies and in England until the beginning of the 18th Century. From then on, it became a regular import item and by the middle of the century it was the fashionable cabinet wood in both countries. Since then, it has been generally considered one of the world's finest cabinet woods and the name Mahogany has come to connote affluence, social position, quality and gracious living.

There are no Mahogany forests. The trees grow scatteringly in the tropical jungle, two to the acre being considered a good stand. The trees are tall and stately and are truly the "Lords of the Jungle". Often they will have a clear trunk 50 to 80 feet before branching. These trunks are buttressed at the base which makes them more secure against the violent tropical storms. The bark is fissured, not unlike that of the elm, and the leaves are compound quite similar to those of ash or hickory. The flowers are borne in small inconspicuous panicles. The fruit is unusual and distinctive, shaped like an upturned pear. When ripe, the heavy, stony shell splits into segments releasing amber-colored, winged seeds, larger than those of maple but single rather than double.

As previously indicated, the West Indies was the original source of Mahogany, with Jamaica, Hispaniola (Santo Domingo and Haiti) and Cuba, being the most important. In England in the 18th century, Mahogany from the West Indies was mostly known as Spanish Mahogany. Today, no commercial supplies of West Indian Mahogany logs or lumber are being

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imported. Cuba was the last source and now the Cuban government has embargoed Mahogany timber exports.

By the end of the 18th century the use of West Indian Mahogany had dwindled both in the American colonies and in England. According to Thomas Sheraton, who was quite a writer, Honduras Mahogany had largely supplanted Spanish Mahogany after 1790. Honduras Mahogany is of the Central American species that is found on the Atlantic slopes from southern Mexico to Colombia and Venezuela. This species is still a major factor in the supplies of Mahogany.

Mahogany was discovered in West Africa about 100 years ago and for the last 50 years has been increasing in importance. The Gold Coast, Ivory Coast and Nigeria have been the principal sources of supply.

The last, and we believe final, general source of Mahogany has been on the upper Amazon and its tributaries in western Brazil, Peru and Bolivia. Only about 25 years ago it was rediscovered in Peru. Some botanists have tried to set up the Mahogany from this region as a new species. True, the wood is slightly harder and heavier than Honduras but at most we believe that it could be only a geographical variety of the Central American Mahogany. Production from this huge area has never reached major importance because of logging and transportation difficulties. This area undoubtedly contains the world's greatest reserves of Mahogany.

Mahogany wood is pinkish or yellowish when freshly cut but on exposure to light and air rapidly changes to a reddish brown or in some cases to a rich brown red. It has a firm, medium texture, has a typically high lustre. It ranges from straight grained to highly figured and takes a fine finish.

Through the experience of generations of cabinetmakers and the sturdy service that it has rendered, Mahogany has acquired, to a superlative degree the reputation of having all the characteristics that make it an ideal cabinet wood. This reputation, in more recent years, has been confirmed by the testing of its physical characteristics by scientific laboratories. These include great stability and strength. It is singularly immune to attack by insects and organisms of decay, therefore very durable.

All the genuine Mahoganies look alike and have very much the same characteristics although there are minor variations that are overlapping. They are as follows:

West Indian Mahogany (Swietenia mahagoni)—the heaviest and hardest of the Mahoganies, but no longer commercially available.

Amazonian Mahogany (Swietenia macrophylla)—not quite as heavy and hard as West Indian but perhaps the most straight-grained of all.

Central American Mahogany (Swietenia macrophylla)—again not quite as heavy and hard as Amazonian but with more figured logs that produce fine veneers.

African Mahogany (Khaya ivorensis)—not quite as firm-textured as the American Mahoganies but averages much more highly figured, therefore produces the bulk of Mahogany veneers and figured lumber.

Long known as one of the world's most outstanding cabinet wood, its principal use has been in the manufacture of fine furniture. It was in this field that Mahogany first became famous and to this day, furniture is the number one market for Mahogany.

Next in the uses of Mahogany will come architectural woodwork and paneling in homes, offices, commercial premises and public buildings of all kinds.

Mahogany has been a shipbuilding wood almost from its discovery. Its use has ranged from canoes to Spanish caravels and ocean liners.

One little known but important market for Mahogany long has been for foundry patterns.

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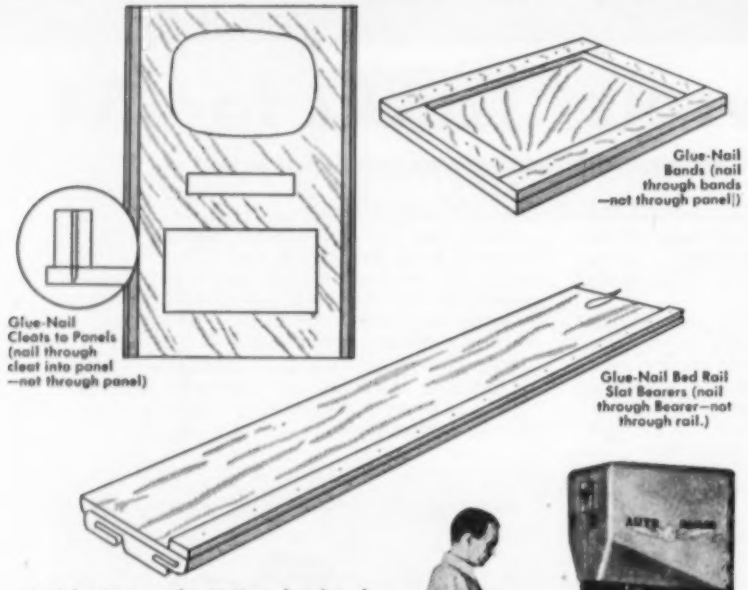
Glue-Nail Bands (nail through bands —not through panel)
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NAMES and EVENTS

Western Foresters Report Utilization, Growth Gains

"A revolution in Western woodlands is creating a new look in thinking, methods and equipment which is achieving closer utilization and faster regrowth," stated William D. Welsh, Crown Zellerbach Corp. official at the recent 44th Annual Western Forestry Conference in Seattle. In his "look-at-the-record" review of recent forestry progress before some 600 foresters and guests, Welsh cited the following accomplishments:

In the field of utilization, technology has made tremendous strides. More than 100 chipper machines in plywood mills and sawmills of Oregon and Washington are chewing up leftovers for pulp mill digesting. New uses for wood are being found: hardboard, alcohol, flooring, molding compounds and plastics.

Tree snags are being given the "heave-ho." Black acres of old burns are being regreened. Logs are being steel-banded to save "sinkers" in rafts going to mills. Helicopters can seed 2000 acres between breakfast and luncheon. More new tree seedlings are being hand planted every year. Foresters are working alongside loggers. Every man is trained to fight fire. Thinking of young stands is becoming an economic reality.

"The public is concerned with the durability of the forests. We can assure them that enlightened private forest management today is providing the wood to keep wood-consuming enterprises in business. Forestry is a dynamic, young man's profession. Of the 24,220 forestry degrees granted thus far in the United States, more than half were awarded during the past twelve years," emphasized Welsh.

Orme Lewis, assistant secretary of the Department of the Interior, said, "Private industry has launched a great program of tree farms and has gone into the timber growing business with such vigor that it may soon be difficult to justify continued federal ownership and management."

An increase of 30% was predicted in industrial wood requirements in the next 25 years, making tree growing a more profitable business, said Stuart Moir, Conference forestry counsel, in asking for a state by state review of the pattern of land ownership.

Keep Green directors from Washington, Oregon, California, Idaho and British Columbia reported that forest fire records in the West in 1953 were greatly improved over 1952, thanks to the public in general and youth in particular. Albert Wiesendanger, director of Keep Oregon Green, reported on steady growth of Oregon Green Guards, now numbering about 30,000 boys and girls pledged to forest protection.

The Western Forestry Conference's top annual award for special conservation achievement in forestry was given to F. Paul Keen, Forest Insect Division, Bureau of Entomology and Plant Quarantine, Berkeley, Calif. The award was initiated in 1951 as special recognition for outstanding service to the forest industry and was first given to Col. William B. Greeley, West Coast Lumbermen's Association.

Newly elected president of the Western Forestry and Conservation Association was John L. Aram, vice-president of the Boise-Payette Lumber Co., Boise, Ida. Other officers: E. R. Aston, Omak, Wash., first vice-president; E. P. Stamm, Portland, Walter S. Johnson, San Francisco,

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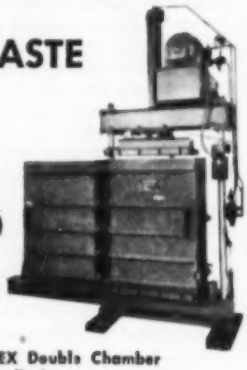

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A. L. Helmer, Polson, Mont., John E. Liersch, Vancouver, B. C., and L. R. Davis, Sand Point, Ida., area vice-presidents; Clyde S. Martin, Tacoma, secretary; C. S. Cowan, Seattle, treasurer; Carl V. Hersey, Portland, assistant secretary-treasurer; and Stuart Moir, Portland, forest counsel.

Fine Hardwoods Association New Name of Veneer Group

The name of the 20-year-old Veneer Association has been changed to the Fine Hardwoods Association to meet changing conditions within the hardwood industry and to simplify hardwood promotion, according to Burdett Green, Executive Vice-President of the association.

The Fine Hardwoods Association will continue and strengthen the Association's previous services and activities, and conduct a greatly expanded program for architects, designers, retailers and consumers.

When Green, who helped found The Veneer Association in 1933 and served as its Secretary-Manager until 1935, returned to the association last summer, he felt that the old association name caused confusion and left an erroneous impression, especially in the minds of consumers. The term "Fine Hardwoods Association" is considered a far more expressive, effective and generally understood name than "Veneer Association" under which to promote hardwood products.

Most of the members of the former Veneer Association are interested in all forms of cabinetwoods, being manufacturers of lumber and dimension stock as well as of hardwood veneer. In addition, there are a number of firms that manufacture only lumber interested in the promotion of fine hardwoods, the protection of hardwood markets, and the development of hardwood resources through such activities as the joint forestry program conducted by the Veneer Association and the American Walnut Manufacturers Association.

In conjunction with its expanded program of service, the Fine Hardwoods Association is moving to new headquarters just next to the association's present offices in The American Furniture Mart, Chicago.

A handsome Hardwoods Center, complete with a display room, is being built in the new office space. When completed in March, architects, designers, decorators, and other specifiers will be able to see full-sized samples of most of the world's fine hardwoods, and also secure information on finishing, methods of handling and availability of the various hardwoods.

Forestry Society Elects

Elwood L. Demmon of Asheville, N. C., was elected as president of the Society of American Foresters in December for the two-year term 1954-'55 by mail ballot of the members. He succeeds George L. Drake of Shelton, Wash., not a candidate for re-election. Mr. Demmon has been vice-president of the Society for the past two years and is director of the Southeastern Forest Experiment Station.

DeWitt Nelson of Sacramento, Calif., was elected vice-president of the Society. He is director of the California Department of Natural Resources.

Elected to the governing Council for two year terms: William J. Brown, assistant chief forester, Kimberly-Clark Corp.; C. H. Coulter, Florida state forester; Dwight B. Demeritt, vice-president, Dead River Co., Bagnor, Me.; Stanley G. Fontanna, dean, University of Michigan School of Natural Resources; P. D. Hanson, USFS regional forester, Missoula, Mont.; Edwin F. Heacox, managing forester, Weyerhaeuser Timber Co., Tacoma; Joesph S. Illick, dean emeritus, New York State College of Forestery, Syracuse; J. Herbert Stone, USFS regional forester, Portland, Ore.; and R. H. Westveld, chairman U. of Missouri Forestry Department, Columbia.

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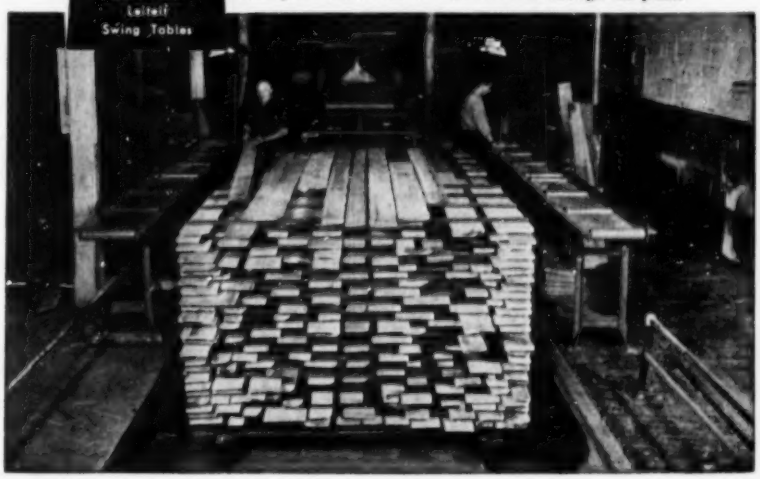
A typical modern installation showing a Leitelt Lumber Lift feeding two cut-off saws. This is how one of the largest table manufacturing plants in the country has increased their production at the vital point where material starts to flow through the plant.



achievement in forestry: W. T. Cox, consulting forester, St. Paul; George L. Drake, vice-president, Simpson Logging Co., Shelton, Wash.; J. C. Evenden, Forest Insect Laboratory, Coeur d'Alene, Ida.; George A. Garratt, dean, Yale University School of Forestry; Leo A. Isaac, Pacific Northwest Forest and Range Experiment Station, Portland; Joseph Kittredge, University of California School of Forestry; Richard E. McArdle, chief, U. S. Forest Service; Woodbridge Metcalf, Argicultural Extension Service forester, U. of California; and Ernest A. Sterling, consulting forester, Montrose, Pa.

Name Hardwood Rules Group

J. P. Hamer of the J. P. Hamer Lumber Co., Kenova, W. Va., heads the current Inspection Rules committee recently named by President Harry D. Gaines of the National Hardwood Lumber Association. Harry Kopcke of the H. C. Kopcke Lumber Co., Atlanta, is vice-chairman of the group which this year includes several new names. The committee:

F. Marshall Case, F. R. Case & Sons, Troy, Pa.; Ed. Thomas, Thomas & Proetz Lumber Co., St. Louis; J. C. Poitevin, E. J. Maxwell, Ltd., Montreal; Roy Davis, Plunkett-Webster Lumber Co., New Rochelle, N. Y.; Robert Van Keulen, Van Keulen & Winchester Lumber Co., Grand Rapids; E. V. French, Atlantic Lumber Co., Boston; R. G. Robinson, Sr., Robinson Lumber Co., New Orleans; Boyd Adams, S. B. Adams Lumber Co., Mobile, Ala.; George Petry, Wm. Bonifas Lumber Co., Neenah, Wis.; James McGraw, Jr., McGraw-Curran Lumber Co., Yazoo City, Miss.; J. Gibson McIlvain, II, McIlvain Co., Philadelphia; B. Z. Millett, Amos-Thompson Corp., Edinburg, Ind.; George Rozzell, E. A. Stewart Lumber Co., Texarkana, Tex.; Robert Smith, Southern Star Lumber Co., McKenzie, Tenn.; William Steele, Bond Bros., Inc., Louisville; R. E. Hollowell, Sr., Pierson-Hollowell Co., Indianapolis; L. W. Wilson, Bemis Hardwood Lumber Co., Robbinsville, N. C.; and Milton Craft, Chapman & Dewey Lumber Co., Memphis.

Material Handlers Elect

C. B. Elledge

Charles B. Elledge of General Electric Co., Schenectady has been elected president of the Material Handling Institute for 1954. Named as vice-presidents were Walter E. Schirmer, vice-president, Clark Equipment Co., Buchanan, Mich., and Edward W. McCaul, secretary, Jervis B. Webb Co., Detroit. Elledge succeeds Howard M. Palmer of Lewis-Shepard Products, Inc., Watertown, Mass., who becomes a director of the association.

Minnesota Honors Chapman

A. D. Chapman

A. Dale Chapman, president of Chapman Chemical Co., Memphis, Tenn., was recently named one of five outstanding graduates in the 50-year history of the University of Minnesota School of Forestry. The honor in the form of an Outstanding Achievement Award, was accorded by the University Board of Regents at the school's silver anniversary celebration.

Mr. Chapman has headed the Chapman Chemical Co. since its beginning 20 years ago in New Orleans.

Wood Preservers Elect

The Vacuum Wood Preservers Institute, meeting Dec. 8-10 in St. Louis, elected officers and discussed recent advances in the technology of vacuum treatment of lumber and wood products. Elected president was T. P. Wier, Jr., managing partner of Wood-Protection Co., Houston. Other officers: Vice-president, James E.

Here's why Diehl Cutterheads—known throughout the woodworking industry for their perfect balance and long-life cutting edges—*give perfect profiles.*

To obtain absolute precision of contour, Diehl Cutterheads are tested with modern optical comparators which permit precision measurement against original engineering drawings. The result is exact contour—*you* benefit by getting Cutterheads capable of turning out volume production to exact dimensions.

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Diehl expert points to magnified cutterhead contour—projected on screen of comparator.

CUTTER DIVISION

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WABASH, INDIANA • U.S.A.

Stewart, G. M. Stewart Wholesale Lumber Co., Minneapolis; Secretary, H. R. Ford, Jordan Lumber Co., Memphis; Treasurer, Joe Gauthier, Cowser & Co., Dallas. The above, plus A. B. Reichenstein, Cowser & Co., were also elected as directors.

Southern Box Makers Meet

More than 50 box manufacturers, their suppliers and arsenal representatives attended the regular membership meeting Dec. 3 of the Southern Box and Crate Association at Shreveport, La. Principal speaker was C. D. Hudson, manager of the National Wooden Box Association, Washington, D. C., who reported on box and lumber conditions throughout the nation.

R. R. Macartney Retires

R. R. Macartney

H. B. Campbell

R. R. Macartney retired Jan. 1 after 27 years as manager of Weyerhaeuser Timber Company's Klamath Falls branch. He was succeeded by Hugh B. Campbell, assistant branch manager since 1938. Macartney, senior among the company's branch managers in length of service, joined an early-day Weyerhaeuser affiliate at Cloquet, Minn., in 1910.

Macartney came to Klamath Falls in 1927 to manage the company's only logging and sawmilling operation in the western pine region, and under his direction the branch grew to an integrated group of forest products plants. Active in industry affairs, Macartney is now chairman of the board of National Lumber Mfrs. Association, and he established the first western pine tree farm in 1942.

Campbell joined the Weyerhaeuser organization in 1926.

New Western Pine Directory

A new membership directory for the Western Pine Association contains listings covering the association's 320 members scattered across the 11 western states and the Black Hills of South Dakota. Also included is complete information on each member, showing production capacities, species produced, seasoning methods and type of stock produced by the firm.

The directories may be obtained free of charge by writing to the Western Pine Association, Yeon Building, Portland 4, Ore.

New Resin Processes

Sharples Chemicals Inc., of Philadelphia, has developed a series of processes for making modified urea-formaldehyde resins which have interesting commercial possibilities. One type, derived from urea, formaldehyde and sugar, is being proposed for adhesives, core binders, treating agents for paper and fabrics and surface coatings. Others are made from formaldehyde and alkyl or alkylol-ureas and can be used alone in coating or impregnating compositions or as additives to achieve particular properties in resin mixtures. H. L. Barnebey, P.O. Box 144, Pittsburgh 30, has been appointed exclusive licensing agent.

Forest Service Men Moved

The U. S. Forest Service has reassigned three of its experiment station directors. Harold A. Mitchell has transferred to the Forest Product Laboratory, Madison, Wis. His former post as director of the Southern Experiment Station, New Orleans, has been filled by Philip A. Briegleb, director of the Central States Forest and Range Experiment Station, Columbus, while the Columbus post has

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been assigned to William G. McGinnies, director of the Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Westhard is Atlantic Agent

Westhard Importing Co., 552 Old Dock St., Terminal Island, Calif., has been given exclusives sales rights of Atlantic Lumber Co. hardwoods in the area from San Francisco to San Diego. Westhard's president, Frank Connolly, and Sterling Stofle, vice-president, along with Phillip Latasa and Herbert Coffey, will supervise sale and distribution of Atlantic's hardwood lumber throughout California.

Personnel Changes

J. E. Hartman

JOHN E. HARTMAN has been appointed assistant sales promotion manager of Firth Sterling Inc., Pittsburgh, according to an announcement from T. T. Pickering, sales promotion manager. Mr. Hartman has been associated with Aluminum Cooking Utensil Co. and Liggett & Myers in sales promotion capacities.

DR. MATTHEW W. MILLER has been appointed technical director of Minnesota Mining & Mfg. Co.'s coated abrasives and related products division.

FRANK E. O'DOWD has been appointed sales manager of Edward Hines Lumber Co.'s millwork division, Chicago. Arthur F. Muschler has joined the engineering division.

F. L. Murphy

FRANK L. MURPHY has been appointed National Starch Products Inc. new division manager on the Pacific Coast. He has had more than 10 years' experience in manufacturing, technical service and sales, starting in the manufacturing department of National's Plainfield, N. J. plant. Most recently he was assistant manager of the Mid-Atlantic Division with headquarters in Philadelphia.

W. ROSS STEVENS has retired as advertising manager after 27 years with DeWalt, Inc., subsidiary of American Machine & Foundry Co. John Stolarz, formerly industrial sales manager, will direct the advertising and sales promotion departments. Lester R. Mellott has been named assistant sales promotion manager.

E. H. SEIM has been appointed plant manager of the Plywoods-Plastic Corp., a subsidiary of Westinghouse Electric Corp., at Hampton, S. C.

WILLIAM J. KLEIN, manager of the Minneapolis branch, Tractor Division, Allis-Chalmers Mfg. Co., Milwaukee, has been named vice-president and general sales manager of the Tractor Division.

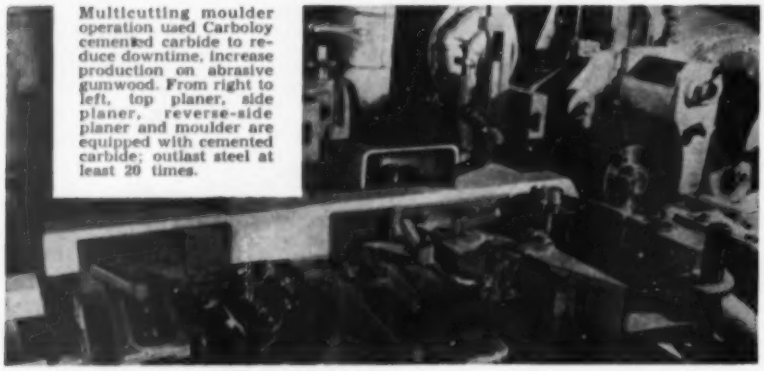
J. J. ALLEGRETTI is director of a central planning department for Masonite Corp. with temporary headquarters in the Chicago office. E. H. Karer is manager of planning and scheduling. The department will be moved to Laurel, Miss.

NELS B. ARONSON has been named western manager of the Minnesota and Ontario Paper Co.'s National Pole and Treating Division with headquarters in Spokane, Wash.

RICHARD E. MILLER has been appointed to the newly created position of product sales manager in charge of all saws and expandable tools sold by Rockwell Mfg. Co.'s Delta Power Tool Division, Pittsburgh.

RICHARD L. GRAY has been appointed general manager of the cabinet division, the Mengel Co.,

Moulder heads tipped with Carboloy® cemented carbide outlast steel 20 times



Multicutting moulder operation used Carboloy cemented carbide to reduce downtime, increase production on abrasive gumwood. From right to left, top planer, side planer, reverse-side planer and moulder are equipped with cemented carbide; outlast steel at least 20 times.

In a cabinetworks plant, steel moulder cutter heads, operating on extremely abrasive gumwood, quickly dulled.

Then the cutter heads were tipped with Carboloy cemented carbide, hardest man-made metal. These carbide-equipped cutter heads, operating at 7200 rpm, resisted the gumwood's abrasive mineral lines and sand . . . outlasted steel at least 20 times! Downtime on this multicutting operation was sharply reduced.

The Carboloy organization makes carbide blanks in a wide range of sizes and shapes, for equipping woodworking tools. *Ask your tool manufacturer for tools equipped with Carboloy cemented carbide.*

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Rush me at no cost or obligation Bulletin GT-206A, *Maintenance and Operating Practices for Tungsten Carbide Tools*, and Saw Tip Catalog Sheet WW53-1, containing prices and specifications on carbide saw tips.

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COMPANY _____

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Louisville. F. C. Nicholas takes Gray's former sales manager position.

REID G. FORDYCE has been promoted to the newly created post of director of development and technical service of Monsanto Chemical Co.'s Plastics Division. Eli Haddad and Ivan W. Wilson have been advanced to assistant directors of technical service.

JOHN L. PAXTON has been promoted by the Frank Paxton Lumber Co. from sales manager of the Chicago office to manager of the Texas Division at Fort Worth.

CARL W. NAGLE has been named secretary-manager of the Woodwork Jobbers Service Bureau, Chicago, to succeed Adolph Pfund.

Milton Wurl

MILTON WURL has been appointed quality control engineer for the hardwood faced panel department of Associated Plywood Mills, Inc., Willamina, Ore. He was formerly quality control engineer of the Penokee Veneer Co. and the Splicedwood Corp. of Ashland and Mellen, Wis.

CHARLES A. JOHNSON of Andover, Mass., has been named to a new post as assistant director of research and development for Atlas Plywood Corp., Boston. He will be headquartered at the Lawrence, Mass., laboratory.

WILLIAM S. BAKER has been named manager of tool sales for Carboloy Department of General Electric Co. in Detroit. C. W. Powell has been named manager of a newly created Allegheny, Pa., district, J. D. Kennedy manager of a South Central Sales district in St. Louis, Alfred M. Thomson, Jr., manager of the East Central sales district, Cleveland, and Harry H. Jason, manager of a New England sales district, Wellesley, Mass.

Deaths

J. H. DOBBIN, 52, veteran spokesman for the Western Wooden box industry, died Dec. 6 at The Dalles, Ore., after a brief illness. As secretary-manager since 1934 of the Pacific Division, National Wooden Box Association, he had long been a familiar figure in western fresh fruit and vegetable packaging and shipping circles. In 1935 he organized the Wooden Box Institute and served as its president.

AL BANKSTON, a director of the National Hardwood Lumber Association, was stricken with a heart attack at his Savannah, Ga., home Dec. 5.

MIDDLE MANAGEMENT PLAN

Continued from Page 22

J shows the earned bonus percent for each month's performance. Inasmuch as actual bonus payments are made quarterly, the $2,500 earned bonus for January is not paid out at the end of the first month but is announced as the balance due participants (Line 1).

No changes in base salaries or in the number of participants were made during February or March, so the potential bonus remained $10,000 per month or $30,000 *cumulative* for the first quarter.

In February $5,000 was earned which represented 50% earned bonus for the month and a cumulative earned bonus for the two months amounting to $7,500, or 37.5%. The balance due participants was $7,500.

In March $2,500 was earned, so the cumulative earned bonus for the quarter was $10,000, or 33.3% of the cumulative potential bonus. The $10,000 was paid to the participants—with each participant's bonus amounting to 33.3% of his own individual cumulative potential bonus for the three months' period.

In the second quarter the participants earned $2,500 in April but lost $7,500 in May and $2,500 in June. Therefore, actual costs during the second quarter exceeded standard

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ARMSTRONG *Steam* HUMIDIFIER

costs by $7,500 and the cumulative earned bonus for the six months was reduced to $2,500.

Since $10,000 was prepaid at the end of the 1st quarter, the group was overpaid for the six months by $7,500. This is shown in line I. This overpayment must be offset by equivalent earned bonus in later months before any additional payments will be made. This is demonstrated in the example where $27,500 was earned during the third quarter ($5,000 in July, $10,000 in August, and 12,500 in September), bringing the total cumulative earned bonus to $30,000 for the nine months' period.

This, less the $10,000 prepaid at the end of the first quarter, leaves $20,000 earned bonus, then distributed. The balance due the participants is again zero.

An additional $17,500 was earned during the fourth quarter and was paid at the end of the year. Thus, the participants earned and were paid $47,500 for the year. On January 1 we start all over with a zero balance and with revised standards where necessary due to changed conditions.

By making quarterly prepayments, the company obviously runs the risk of overpaying the participants for the year. If this happens the participants are not asked to return their overpayments. The company stands the loss. However, we consider the benefit of frequent payments, which help to keep the incentive alive during the year, worth the risk of overpayment.

The monthly performance report to the participants shows, in addition to the cumulative bonus computation for the year to date, a summary analysis of the savings (or loss) by major items of cost (lines K through O). These figures are further broken down in complete detail by department and product.

Typical of the several reports issued to inform the supervisor of his cost variances is the Monthly Expense Budget and Performance Report shown in Exhibit II. This report compares the actual burden expenditures of the past month with the standard burden allowance and shows the variances for the month and the total variance to date.

It is significant that the budget allowances vary in proportion to the hours worked during the period, and thus the budget remains a fair standard at all productive levels. This can be seen by noting that the actual activity in the example is more than double the hours expected during an average of the year, yet the overall control of expenditures is not lost.

Detailed reports on scrap, direct labor and direct material variances are also published. These timely reports enable the participants to analyze the variances and take corrective action. They know each month just how they are doing under the plan.

In addition, quarterly statements are issued to each participant showing the amount of his bonus payment and how it was computed. Exhibit III shows such a report to Joe Jones, foreman, at the end of the third quarter.

We will never know what our costs would have been if we had not installed the management incentive plan; therefore, a dollar-and-cents appraisal is difficult. However, all are agreed that morale is improved and that more effort is being exerted to effect cost savings. The incentive opportunity unquestionably has caused the group to do a better job of planning, controlling costs, and working together, not just because they have to, but because they *want* to. This is the most significant accomplishment of the plan—better attitudes, more loyalty willingness to work together as a team to attain maximum overall effectiveness.

As evidence of this teamwork, a "cost savings committee" was organized after the participants requested a more adequate system of communicating their cost savings ideas. This committee is composed of six partici-

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pants, each elected to represent one of the six sections into which the participants are divided.

A participant can serve as a member of the committee for a maximum of two consecutive six-month terms.

The prime purpose of the committee is to exchange ideas and stimulate cost savings suggestions. The committee has no line authority and, therefore, cannot usurp any management functions. It reviews the suggestions submitted by the participants and channels them to the individuals in the line organization who are in a position to put the cost savings ideas to work.

Intangible results of the plan can be listed as follows:

1. **Better planning.**
2. **Closer control of costs.**
3. **Reduction in waste of time and materials.**
4. **More suggestions from management personnel and improvement in thoughtfulness and scope of suggestions.**
5. **Better care of equipment.**
6. **Increased earnings of participants—paid out of overall savings to the company**
7. **More equitable wage relationships with hourly rate employees on incentive.**

Tangible evidence of good results is that we are now beating our standards regularly, whereas prior to the installation of the plan this was not so. Furthermore, performance is improving.

Exhibit IV shows the amount of cost savings (or loss) as a percentage of standard costs by years since the plan was installed in October of 1950:

1950-3 months:	(1.70%)	loss
1951-year:	0.24%	gain
1952-year:	0.15%	gain
1953-8 months:	0.68%	gain

The fact that in 1952 the savings were less than in 1951 was partly the result of an expensive repair job made necessary because several thousand chairs were manufactured before it was discovered that a faulty die had misformed a part in such a way that it did not meet fatigue tests. This is typical of the kind of expense that the plan attempts to minimize. You can be sure that the participants will see to it that errors of this kind will be few and far between.

Although the attainment expressed as a percentage of standard cost may seem small, the dollars involved are substantial and afford a real opportunity for the participants to increase their earnings. In addition, the attainment of objectives brings keen satisfaction to the individuals and the close cost control evidenced by the above figures enables the company to rely more on standard costs and work to closer tolerances.

Editor's Note.—*The foregoing article was adapted from a paper presented by Mr. Davis at the 17th Annual National Time and Motion Study Management Clinic, Chicago.*

SMALL SAWMILL STANDARDS

Continued from Page 24

under such controls is charted in Fig. 2, showing the actual number of boards tallied at each thickness. The author concludes, that with well maintained controls it is possible to keep thin rejected boards within 1%. A study of 100 shipments at a concentration yard, from 24 different suppliers, indicated an average of 4.5% thin boards which were rejected, and that four-fifths of all the shipments exceeded the 1% rejection standard.

It would thus appear that developing and maintaining a proper system of statistical controls could well cut waste by as much as 3½%, which might be the difference between a loss and a profit on the operation.

Co-operative Sawmill Operations for High Yields

This paper was based on many years of experience by Frank T. Parrish, experimental and develop-

Tomahawk Boat Company finds "Oliver" Moulder improves quality of products . . . and is unmatched for *fast, accurate set-ups!*

"OLIVER" 4-INCH MOULDER

Chain drive — motor has forward, reverse, run, jog and stop buttons. Cutterheads are V-belt driven at 7200 r.p.m. (slower if desired). Cutterheads fitted with 4 thin or 2 high-speed knives. Each of 5 motors has start and stop button. Large button stops all motors.

Like other owners of the "Oliver" 4-in. Moulder, the Tomahawk Boat Company finds the high-speed cutterheads produce an extra smooth finish. Delicate mouldings are cut without crushing the fibers. Though standard speeds range up to 80 feet a minute, speeds up to 120 feet are produced by changing the size of the flat pulley. Naturally, the costs of succeeding operations are cut by the fine work done by this "Oliver" Moulder.

Your Moulder has increased production, and has improved the quality of our products greatly. It cannot be beat for exceptionally fast and accurate set-ups of which we have many. Fast spindle speeds and absence of vibration contribute to turning out the finest mouldings we ever produced.

Tomahawk Boat Co. Tomahawk, Wis.

Write for all the facts on this "Oliver" Moulder

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ment manager of the Heywood Wakefield Co. His position gave him an unusual opportunity to correlate the dimension sizes required for furniture, even to the extent of designing furniture items to use shorter lumber, with the operating schedules of their supplying sawmills, many of which were in the small sawmill class, and working off second growth New England hardwood stumpage.

It was his conclusion that this correlation improved the yield of the sawmill and saved considerable cutting into short lengths at the furniture factory. This correlation also included segregating chippable by-products for a co-operating paper and pulp mill.

Conclusions

None of these papers offered a definite program as to what standards can be established to improve the quality of lumber from small sawmills, but each pointed out directions in which operating techniques can be made more efficient. Further study will be needed to map out a practical standardization program. There seem to be several promising approaches:

Establish minimum requirements for sawmill machinery.

Develop a permissible range for saw blade and tooth design.

Determine a standard range of lumber thicknesses which is equitable.

Relate the width and length of cutting schedules to the character of logs available.

Establish maintenance standards for all sawmill equipment.

Another important step, which is outside of any direct standardization program, is the better education of lumber buyers, even of government departments, so that they can more equitably relate their net size requirements with the potential products of small and often low grade logs.

The traditions of sawing boards as long and as wide as possible will have to yield to the more practical method of permitting sizes to be as small as can be efficiently utilized.

WHERE IS WOOD HEADED?

Continued from Page 25

take the necessary steps to insure a continued buying preference for the wooden cabinet.

In recent years, the status of the wood cabinet, in television particularly, has become solidified as the size of the set increases. One can hardly ignore the fact that the television set occupies the most advantageous location in the majority of living rooms today. Television must be seen to be enjoyed. It is this "sight appreciation" that offers the wood industry its major advantage—the natural beauty of the wood.

Most everyone is aware that today's market has become considerably price conscious, and because of this, manufacturers have stressed lower costs for the first time. This can be partly attributed to the fact that a greater percentage of the "lower economic groups" are buying television sets today than ever before. Price consciousness is strongest in this section of the buying public, with quality and beauty becoming only secondary factors. Here wood substitutes begin to move in offering "real price bargains" to the masses.

To counteract the surge of metals and plastics came the manufacturers of tempered and untempered fibreboards and similar wood products. Coupled with the introduction of a printed grain, these materials have proven a more than adequate challenge to the wood substitutes threat, and the wood industry was far from shut out in the battle for price supremacy.

In fact, printed materials are today a much more serious threat to the genuine veneered cabinet than all of the wood substitutes combined. The real battle then is being waged within the wood industry itself.

Naturally, we all feel that the wood cabinet is vastly superior to the plastic-metal cabinet in every respect. However, if the wood industry is unable to convince the American public of that fact by proper promotion and intelligent utilization of advertising media, the next most logical step would be to combine the two products into a finished cabinet mutually acceptable by all. "If you can't beat 'em, join 'em!".

Another important achievement in the wood industry's fight against competition has been the recent development of the extrusion process for manufacturing a quality chipcore at a relatively low cost. This process, which enables the wood industry to utilize its own waste products in a core panel, should provide the impetus necessary to recapture lost markets and open many new fields.

Veneering the chipcore product should permit the wood industry to strengthen its position in the cabinet field. By incorporating the proper cabinet design, this process will enable the manufacturer to apply strength and beauty as well as low cost to the modern wood cabinet of the future and regain previously lost markets.

In the not too distant future, another boom in the television market looms in the form of color. Many who would have purchased black and white sets within the past six months have hesitated and stalled because of the advance and premature publicity given color. When this market breaks, the higher than average cost of a color set will certainly demand the strength and beauty of a wood cabinet.

It appears that we have definitely established the fact that wood has attained a prominent status in the radio and television industry and in the cabinet field; it also appears that the wood produet maintains that prominent position despite the intense competition of wood substitutes that will offer a slightly inferior but lower priced cabinet.

The struggle in the field of television cabinetry between wood and substitutes invites the concern of the entire wood industry. Television has returned the family to the home—specifically the living room—where the styling and beauty of the wood cabinet can rekindle a desire for quality furniture.

The wood industry can do well by benefiting from the old axiom that healthy competition makes healthy business. By trading on its flexibility of production and wealth of experience, it can more than retain the initiative in the furniture field.

That competition will be terrific cannot be denied. It can best be summed up, I think, by quoting the November 6th issue of *U. S. News and World Report*. An article entitled "How to Plan for 1954", advised businessmen: "Get ready for intense competition. Be cost-conscious. There is to be a premium for efficiency—a severe penalty for inefficiency. The *buyer* will call the time all along the line."

The article further states: "Real selling will be required to keep ahead of the competitor. Some price cutting will also be required. Costs then will have to be held down, and profits, more and more, will depend on efficiency."

MATERIALS HANDLING

Continued from Page 28

operations in plants and warehouses. Present building designs have been influenced by full consideration of these factors.

Building design engineers are mindful of all important trends affecting handling problems. This requires flexibility in design of structures to meet the rapid changes and improvement

Continued on Page 62

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of handling methods. Here are some of these trends:

(A) More integrated flow of materials;
(B) Greatly improved mechanical handling facilities;
(C) Radical changes in the provision of outside storage areas;
(D) Departure from present storage and warehouse designs;
(E) More consideration to human factors, such as safety, sound control, lighting, ventilation, and color conditioning.

Modernization of Operations

Studies of handling practices, layouts, movement of materials and handling equipment should be the responsibility of the engineer, working with plant staff personnel. This might well be a continuing program to keep pace with the fast-changing picture in industry today.

This subject of modernization of operations is one of the most essential in the list of basic handling factors and could mean the success or failure of any system if not properly emphasized. So, place this phase of your program very high among your requirements.

Evaluation of Equipment

About five years ago a survey was started covering 45 lift trucks in 12 separate operations on heavy, medium and light work. The trucks ranged in sizes from 1,000 to 7,000 lb. capacity and were of seven different makes. The survey covered about 3,000 hours of operation.

While the reports of the survey were not entirely comparative, we did gain a number of facts which were of importance in evaluating essential factors. One lesson we learned was that a preventive maintenance system on lift trucks is extremely necessary. We also found that a substantial method of evaluating lift trucks does have merit.

In November, 1950, we set up our maintenance control department to cover all maintenance in the entire plant. Before the program became effective, no records were kept on maintenance of materials handling equipment. Without records or a history to base schedules on, lubrication was erratic and overhauls usually were performed only when breakdowns occurred.

We needed and adequate preliminary schedule for lubrication that would not tie up either the transportation departments or the garage. Lack of records prevented the garage from having a normal supply of service parts on hand. As a result, some

equipment was tied up for a long time. As soon as such information became available and records were established, we were on our way.

A parts supply crib was erected and kept in good supply. A lubrication schedule was set up based on weeks of equipment operation. Identification tags were riveted in a prominent place on the machines. A tentative overhaul program was set up. Cleaning and painting were scheduled to cover all equipment at least twice a year. Considerable interest and cooperation was extended by equipment users, management and the garage employes.

We established a coding of repairs to identify mechanical weaknesses. An immediate effort to improve these conditions revealed cases of poor equipment design, operator failure, and peculiar plant conditions such as wear and failures due to bad road conditions.

A further need became obvious as the program continued. In many cases we spent excessive amounts of money on maintenance when, if records had been available, they would have shown that it would have been more economical to replace the equipment.

Our next step was to install hour meters on all gas and gas-electric units. While the results are not yet conclusive, they will help us to come up with some solid answers.

Now, what about the results in dollars and cents? Comparing the first six months of 1952 against the last half of the year, we showed total maintenance for the first six months on all fork and platform equipment amounting to $22,950.79 against $15,475.20 for the last half. This is a reduction of $7,475.59 or 32.6%. Both figures include major motor overhauls and repairs or replacements of the armatures and commutators on gas-electric units.

The preventive maintenance program has done much to create better employee relations because it has reduced downtime allowances and helped prolong equipment life.

The production foreman benefits from the standpoint of lower operating costs and less downtime on the equipment. Downtime in reality reflects an indefinite amount of excessive cost through allowances when stock is not available at the proper time."

The statistical method of evaluating lift trucks has application in determining the best type of lift truck when more than one make might be acceptable. A report from a statistical quality control engineer lists the most important characteristics of the equipment to be rated.

These characteristics are taken from each manufacturer's published specifications and included, such as type of engine, horsepower of engine, turning radius, safety features, ease of handling, etc. Before a rating can be

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computed, the difference in percent is calculated from the established characteristic and the ideal. A weighting table of classification defects is used with a scale of demerits based on the relative importance of the defect.

Control of Materials Handling Costs

In the original planning of an overall materials handling system, we learned that an effective cost control plan was paramount in judging actual accomplishments and providing an incentive to maintain a continuing cost reduction program. In a typical manufacturing operation showing a consistent record of handling savings, the experience was so interesting that I feel it bears repeating.

From data compiled from cost and other plant history records, they learned that expenditures for moving materials were more than 45% of each dollar spent on prime labor. With this information compiled and analyzed from a five-year history of handling costs, they called together the best experience in their plant to discuss ways to control and reduce these costs.

They broke down their average cost into the correct charge accounts for all types of labor chargeable to the handling of material. They then applied those figures on a tonnage basis to prime dollar expenditures required to meet the annual production schedule. From this they developed their first plant materials handling budget.

After their first season's experience of operating under this type of budget, they realized that materials handling costs were a major control factor in manufacturing expense. From this experience they decided to establish a staff department to control and reduce handling expense and to help improve facilities and methods.

As soon as this department was organized, they established budgets for each of the manufacturing departments. These budgets were set up in proportion to the prime labor expenditures required for meeting individual production schedules.

Department and sectional supervisors attended a series of meetings with the materials handling engineer, the budget and statistics department, and the accounting department, to familiarize themselves with the intent and scope of the budgets assigned to them. The supervisors were notified that they were responsible for controlling and reducing the cost of moving materials in their departments. Then followed a series of intensive training programs for supervisors to outline ways to control budgets. The supervisors were informed of the functions of the materials handling department and how it could help reduce handling problems.

They report that company management—through its intense concern over materials handling expenditures—and the cooperative efforts of the materials handling section of manufacturing research also have had a definite effect on the control and reduction of these expenditures at their plant.

As a result of this effort, they operated in 1952 with a reduction of 6.4% under the 1951 season. For the first quarter of 1953, they showed a reduction of 12.7% under the 1951 season.

Editor's Note.—*The foregoing article was adapted from a paper presented by Mr. Weber at the 17th Annual National Time and Motion Study Management Clinic, Chicago.*

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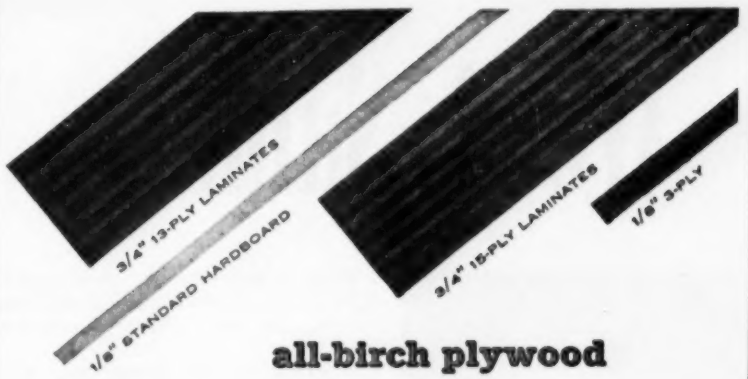

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LESTER J. CARR

When the Forest Products Research Society stages its annual meeting in Grand Rapids next May, the president's gavel will be turned over by the incumbent, Bob Pauley, to Lester J. Carr, now serving as president-elect.

What has Les done to deserve this honor? Plenty, for he's a tireless worker in the cause of FPRS. He was one of the founding fathers of the Northern California Section and served the national society as southwest regional board member for three years before his nomination as vice-president.

Les Carr also has been active in the promotional doings of the Western Pine Association and is currently serving his third term as promotion committee chairman. He is a member of the promotion committee of the National Lumber Manufacturers Association and is active in the joint promotional program of the WPA and National Woodwork Manufacturers Association.

His many promotional activities stem naturally from his selling background. He entered the lumber industry some 30 years ago, starting in the Chicago sales office of a large southern firm. Several years later he journeyed to Pine Ridge, Ore., where he put in three years as a laborer learning various aspects of the manufacturing end of the lumber business.

In 1928 he moved down to California, where for the next four years he represented Kansas City and Pine Ridge lumber interests. After another three years of selling for different concerns, Les started his own company in 1935.

Moving to Sacramento two years later, he entered into a partnership and became vice-president of two lumber concerns which have since been sold, one in Quincy, Calif., and the other in Covelo, Calif. In addition to his present duties as general manager of L. J. Carr & Co., he is sales manager of the Sacramento Box & Lumber Co.

Les has been a licensed airplane pilot since 1929, and saw more than three years of active duty in World War II as a major in the SEPE Technical Command. He is an ardent yachtsman and skier, and an active member of several fraternal and social organizations.

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Mr. Crane's record of progressive thinking and vision were given official recognition recently when the University of Michigan conferred upon him the degree of Bachelor of Science in Forestry. Awarding of the degree, announced by Dean S. G. Fontanna of Michigan's School of Natural Resources, was made retroactive to 1914.

That was the year young Harold Crane left the university—two months before he was due to graduate—to go to the million-acre Klamath Indian Reservation in Southern Oregon as assistant supervisor. It was during the succeeding four years that plans were made for the selective harvesting of the reservation's great, almost untouched forest of virgin Ponderosa Pine. There Crane completed his education in sound forestry which was to mark his work in operations across two of the nation's greatest timber-producing states.

After serving with the Field Artillery in World War I, he returned to the Klamath Country and experienced the ups and downs of small mill operations there and in California, where the big challenge finally came.

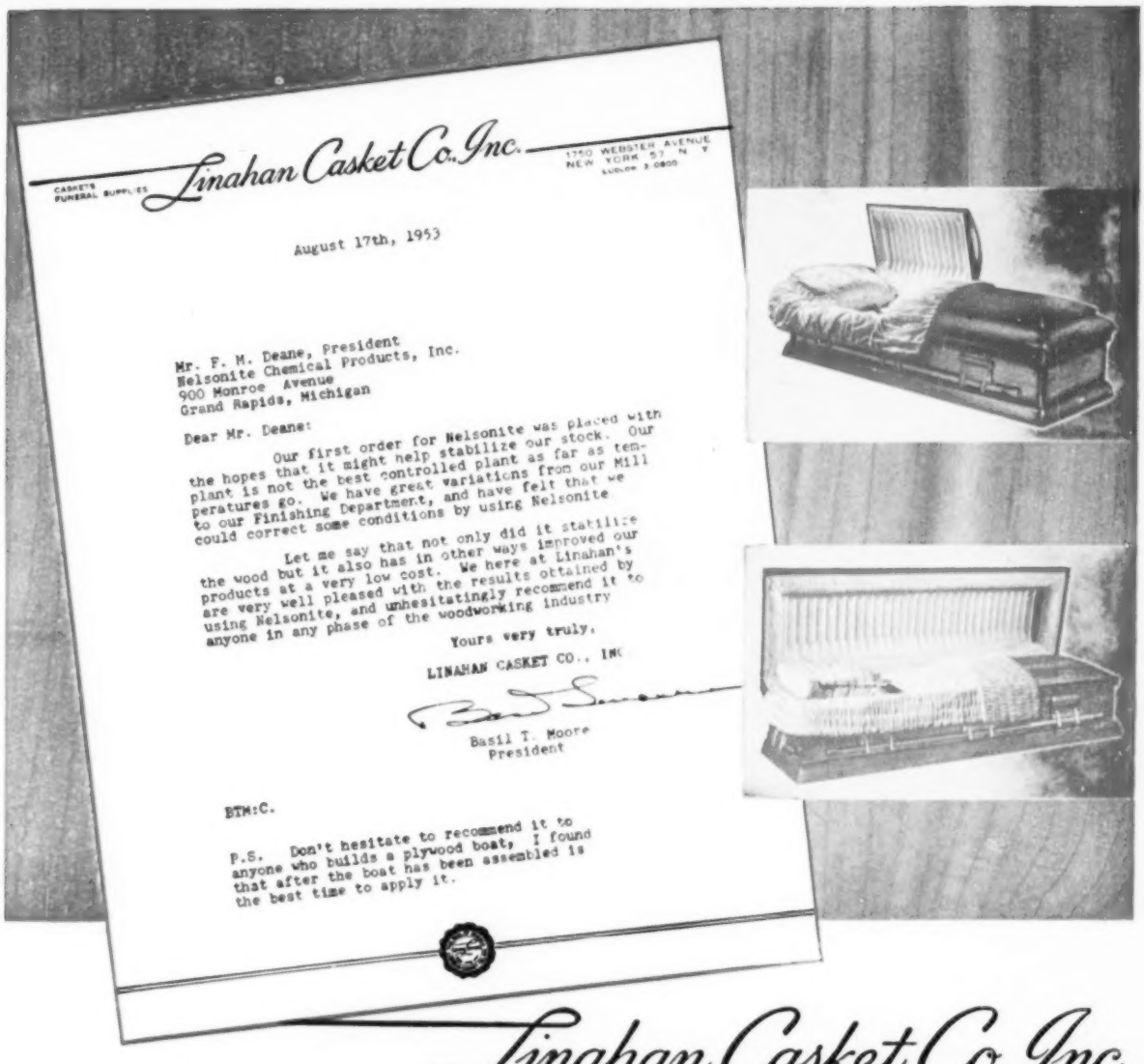
Many of the West's top timbermen had examined and turned down a tract of timber in Northern California known as the Perrin Timber. It was, they said, too costly to log, but Harold Crane figured a new way to log the difficult area profitably. In 1943 he, Walter Beane and Robert Grimmett made the purchase. In 1946 they sold a small mill in order to concentrate on the California operation which today is considered one of the industry's finest.

A forester at heart, Mr. Crane harvests his timber when and because it is ripe. He plans on a long-term basis. He leaves thrifty trees and small growth so there will always be timber. He has always been careful with fire, and insists others be the same. He has talked conservation and improved logging practices since the first day he hit the lumbering country He fought his way uphill on his own efforts. His camps are loyal to him, and he pays top wages and gets top men.

Known to his men and associates alike merely as "Crane," he is a man of many friends and few enemies. He has managed to squeeze public service into his busy schedule. He is an active member of the Western Pine Association, has served and is serving on various committees (as chairman of some), and has been recognized throughout the West as a leader in the forest industry.

Logging Tool Movie Ready

A 16 mm movie in color and sound, "New Tools for Loggers," is now available on loan from LeTourneau-Westinghouse Co., Peoria, Ill. Fifteen minutes in length, it shows experiences of leading logging outfits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